

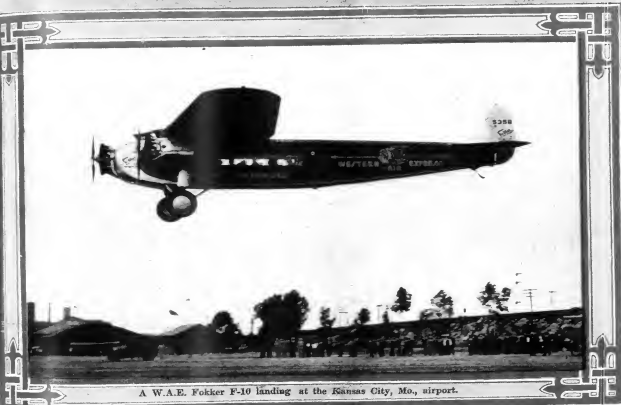
AVIATION

The Oldest American Aeronautical Magazine

JUNE 4, 1928

Issued Weekly

PRICE 20 CENTS



A W.A.E. Fokker F-10 landing at the Kansas City, Mo., airport.

VOLUME
XXIV

Special Features

The Warner "Scarab"
Naval Reserve Aviation
The Aero Craft "Aero Coupe"

NUMBER
23

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You can market your entire 1929 output over the counter at this gigantic pageant of aeronautic progress. California Air Race Association, Telegraph or air mail Cliff Henderson, Managing Director National Air Races and Aeronautical Exposition, Ambassador Hotel, Los Angeles, California.

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FIRST Again...



The race to reach the disabled Bremen—the Fairchild Cabin Monoplane

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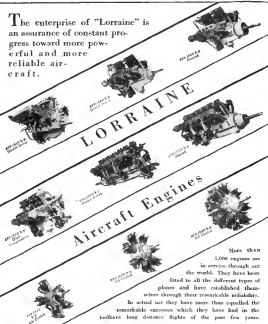
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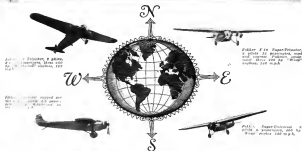
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The Consolidated Courier



Consolidated Aircraft Corporation
Buffalo, N. Y.



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AVIATION

The Oldest American Aeronautical Magazine

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ALBERT J. MULLIGAN	DAVID J. LANE
Asst. Business Manager	Asst. Editor

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The Oldest American Aeronautical Magazine

Vol. XXIV

JUNE 4, 1928

No. 23

Speed Ranges

THE NORMAL speed range of present day aircraft is roughly two to six, that is, the high speed is about twice the landing speed. By increasing the landing speed by ten miles per hour one is able to increase to high speed by twenty miles per hour and it is only natural that designers have gradually increased their landing speed in order to gain high speed. There is, however, a limit to this increase even if planes are flown from cordoned fields and are handled by expert pilots. When it comes to planes which are to be handled by inexperienced fliers and from poor fields it is almost universally admitted that we have already reached landing speeds which are too high.

The simplest expedient for increasing the speed range is to increase the reserve power. Certain racing planes have a speed range of more than three to one but with present day engines such reserves are hardly practical and the fundamental problem presents itself of either decreasing the resistance of a given wing section or of actually changing the shape of the section by mechanical means. The latter method seems to indicate the most promising results but the mechanical difficulties involved are extremely difficult to overcome. That no satisfactory mechanical means of changing wing sections or less generally adopted does not mean that it never will. The competition for the Guggenheim prize should bring out many new ideas and it is certainly hoped that some method will be found that will check the present tendency towards high speeds in landing.

Civilian Engineering

THE NATIONAL Advisory Committee for Aeronautics now has one of the best equipped laboratories for aerodynamic research in the world. In addition, it has pilots who are accustomed to flight testing, and also it has developed a series of instruments for recording data that are unique.

Heretofore its efforts have been directed toward pure research and the solving of the problems which are met in the design of military craft. With the growth of aviation within the N. A. C. A., which is subsidized by the government for the purpose of serving the "people", should turn its attention more to the specific problems which affect commercial aviation. One of the first things which ought to be done is to investigate the aerodynamic powerplant. Instruments could be developed to measure the sounds in the cabins of closed planes. Various experiments with mufflers, geared propellers and peddled

walls could be tried. And manufacturers could send their products to Langley Field and have actual tests made of the volume of sound in their planes.

Then there is the matter of ventilation in the passenger's cabin. This subject has never been scientifically studied as far as aircraft are concerned. Maximum accelerations or the stresses which can be placed on airplanes due to very heavy air such as is found in storm-dorms is also a matter of great importance of which very little is known. For instance, which is primarily a civilian problem, is another subject which needs considerable study. The N. A. C. A. is already studying this problem.

The above are but a few of the many problems which could be suggested as needing study from the civilian angle. At the manufacturers' meeting, held recently at Langley Field, the N. A. C. A. showed that it was anxious to tackle some of these problems, and it is now up to the builders of civilian aircraft to formulate their needs. There is no doubt that the N. A. C. A. has the equipment and personnel to tackle jobs which would be impossible for the individual manufacturer to undertake, and there is also little doubt that the manufacturer who takes advantage of these facilities will have a valuable adjunct to his own engineering staff.

A Good Policy

A NOTEWORTHY sales policy was established by the Stinson Aircraft Corp., when that organization turned down an order sent in by the German embassy, Miss Tina Haaske, for a Stinson-Detrolite to be used by her on a West-East trans-Atlantic attempt some time during the coming summer.

The Stinson company is to be highly commended for its inauguration of such a policy, for, regardless of the fact that one of its planes has successfully accomplished a West-East Atlantic flight, it has been more or less proved that the safety factor of a single engine plane over the North Atlantic stretch is very small indeed. Why then should the Stinson company lend itself to a venture which, even if successful, would add very little to its name, and less to the advancement of commercial aviation? The Stinson company has taken the initiative in the conducting of an exceedingly worthwhile campaign—to keep single engine planes off the Atlantic and Pacific. It is to be hoped that other manufacturers of possible trans-oceanic planes powered with but a single engine will follow the lead of the Stinson company and adopt a similar policy.

Naval Reserve Aviation

Since its Inception in 1923, 175 Men Have Been Trained and Four Reserve Aviation Units Have Been Established

By JAMES P. WENES

DECLARATION OF the existence of a national emergency soon will be all that is required to increase the strength of the United States Navy by ten aircraft squadrons, which will be ready for action practically overnight. This addition to the country's war-time fighting strength will be made possible as the result of a program now being carried out by the Navy Department for building up an active, well-trained air reserve.

Under the present plan, the reserve aircraft squadrons are not to be inactive organizations. The officer component is regularly being killed, likewise, the enlisted personnel are being recruited and trained. When the program is completed, the Navy will have 30 aircraft squadrons that may be mobilized "in case of national emergency" within 90 days, officials of the department say.

Since 1923 the Navy has been training aviators for this program. In those five years, 175 men, almost all of them college graduates, have completed a special course and have been commissioned aviators in the United States Naval Reserve with designations as naval reserve aviators. Seventy more are expected to have qualified by the end of the 1928 summer training period.

Upon completion of the course and as soon as these men receive their commissions, they are assigned to squadrons for further training. Officials of the department are quick to admit that the plan has not yet progressed far enough to allow the training of the personnel of each squadron as a whole, however, rapid strides are now being made in this direction and it will not be long before this is accomplished.

The plan of establishing an active reserve aviation force was conceived in the Bureau of Aeronautics in the autumn of 1923, an officer being assigned position in the Bureau of Navigation with a representative of Aviation, Lieut. Comdr. Richard E. Byrd, Henry B. Goetz and Victor Henschel were the originators of the plan. John W. A. Moffett,

chief of the bureau, supported it to the point of getting appropriations made. In the Bureau of Navigation, which handles all matters pertaining to personnel, Capt. K. M. Bacon and Comdr. J. A. Schofield proposed and supported a plan that would allow the program to be carried out.

Latter came the general plan of building squadrons for mobilization in such. The late Lieut. Comdr. Neil Davis was responsible in part for this. Soon as



John William A. Moffett, chief of the Bureau of Aeronautics

"Life and he said of the work of Capt. C. B. Tracy, who is director of Naval Reserve personnel," said the officer, who is being quoted. "It is not well-known to explain such an event. While aviation is only a part of his job, he has been tremendously interested in the development as a branch of the reserve and he is responsible to a large extent for its success with which the plan is meeting."

No time was lost by the Navy Department after the formation of the plan for the organization of the aviation reserve. In 1923 ten Naval Reserve aviation units were established and the training of the first classes of reserve aviator students was started. One of the units, as being, as they are now known, was at Fort Raintree, N. Y., but it was later moved to the present site of Rockaway Beach, L. I. The site was established at Sonoma, Mass. As the program was enlarged upon, two more units were created. The third was established in 1924 at Great Lakes, Mich., and the fourth at Great Point, Wash., in 1925.

The Reserve Aviation units are the primary training school for student naval reserve aviators. These bases are in really small naval air stations. Each is located on a sheltered belt of water where no planes are landed. At one or two of the units, landing fields have been laid out and are now in use. There are rigging and machine shops at each so that the planes may be completely overhauled. Hangars, barracks, office

June 4, 1932

and so on, have been erected also. In many cases, these buildings are only temporary structures, this is true, for example, of the base at Great Point, the last of the four units to be established.

In the past, the grand old "M.P." the type of airplane in which many famous naval aviators made their first flights,



The first beach at Pensacola in the early days of naval aviation.

has been standard equipment for the primary training of reserve student aviators. The first ships of this type were constructed in 1927. They are much like the Army's famous "Jenny", except that the N-R's have a large wing span to provide the additional lift necessary for carrying a single engine. The power plants are 150 hp. Wright Hispano-Suiza engines.

It took a long time to develop a training plane which was better than the N-R. There are many who are still willing to agree that the N-R was the best training plane the Navy ever had. But with the development of the radial air cooled engine and its adoption by the Navy for practically all types of aircraft planes, the N-R's outgrew its usefulness. The Consolidated training plane, known to the Navy as the "NT", is replacing the N-R. It is distinguished by three in shape of naval reserve aviators, that are of the new Consolidated plane, powered with Wright "Whitcomb" engines, will be available for training purposes at each of the four units this summer. The N-R's will not be used after this year.

Advanced work at Hampton Roads and San Diego.

Advanced training of student naval reserve aviators has been continued in the past by the personnel of the naval air stations at Hampton Roads, Va., and San Diego, Calif. The students who received their primary training at Great Lakes and the two reserve stations were sent to Hampton Roads, early last from the Great Point base were sent to San Diego. The advanced training has been handled at the two naval air stations in the service types of planes available at each, adhering as closely as possible to the syllabus for flight training laid out by the Bureau of Navigation. The work will be made more intensive by the naval air stations at Pensacola, Fla., it has been announced by officials of the bureau.

"It is eligible for admission as a student aviator the applicant must be more than eighteen years of age and less than 30. It is a test to be repeated for primary flight training," says a letter titled the "Selection and Training of Student Naval Reserve Aviators" sent by the chief of the Bureau of Navigation to be commanders of all naval districts, the command-

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ant of the local Navy Yard, the commanding officers of the naval air stations at Hampton Roads and San Diego and the commanding officers of the four reserve units.

"Those applicants are considered, in general, because they remain active flies for a longer period of time," the letter continues. "The applicants must be college graduates, attending college with the expectation of graduation, or possess the equivalent of a college education. They must be American citizens, and they must have direct permanent residence in the city in which the aviation training is located to which they will be attached after completing the training and receiving their commissions."

"In addition to the ordinary physical examination, all student aviators, before being ordered to primary flight training, must have passed a flight physical examination within six months of the date that they report for flight training. Reports for waivers of physical defects for student aviators will be as soon as granted. If a naval flight surgeon is not available in the locality, an examination by an Army flight surgeon will be accepted, providing satisfactory correspondence can be made locally to have him conduct the examination."

Length of Ground School Varies

"The complete course of training for student aviators, leading up to a commission as such in the United States Naval Reserve, consists of the preliminary ground training, primary flight training and advanced flight training. The preliminary ground training is conducted while the students are on inactive duty. Lectures are held once or twice weekly, as often as desired. The length of the ground school course varies according to the frequency of the lectures. If the lectures are given twice weekly, the course should cover a total of five or six weeks."

"After the students have satisfactorily completed the ground school course, they are eligible to be sent to the nearest reserve aviation unit for primary flight training. This course consists of 45 days' training with pay and allowances. The



Lieut. John Norman, commanding officer of the Reserve Aviation Unit, Rockaway Beach, L. I., N. Y., directing the work on an "NT" airplane.

student is given approximately 20 hr. instruction in flying elementary types of airplanes, followed by 30 hr. solo flight time in the same types. Students who satisfactorily complete the primary flight training are eligible for the advanced course, which likewise consists of 45 days' training. In this course the student is given approximately 50 hr. flying in advanced types of airplanes, ground and aerial machine gun work, bombing course and navigational flights. Immediately following the completion of the advanced flight work, he is examined professionally for his commission.

The ground school course for student aviators is now being conducted at 10 universities and colleges throughout the

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Planes ready to be "put over the side" at the Reserve Unit located at Squamport, Maine. Two planes can be seen in the water.

The Warner "Scarab"

New Seven Cylinder Radial Engine
Rated at 110 Hp. at 1850 R.P.M.

APPROXIMATELY ONE year ago the first Warner "Scarab" seven cylinder radial engine was completed and exhibited to its first 90 hr. test. Later, after 120 hr. of testing on the torque stand, this engine was installed in a Taper Air engine and has been in service ever since. The first engine was built in the shops of the Warner Aircraft Corp. of Detroit and, after successful tests were completed, the Warner Aircraft Corp. of Detroit, Mich., was formed, with Norman Stillman, president and general manager, W. O. Warner, vice president and chief engineer, Nelson Hartwick, treasurer, and W. J. Davis, secretary. However, it was not until February of this year that the second experimental Warner engine was completed. It was this engine which was submitted for test by the Department of Commerce and later was the second commercial engine to be approved by the Department, the first being the Fairchild-Chrysler.

The Warner Aircraft Corp. is now getting into production



Rear quarter view of the "Scarab" showing the Stromberg carburetor and the two Schrader magazines.



Front view of the Warner "Scarab" engine.

and has started making deliveries. The first production engines were delivered for installation in the Grumman Junior monoplane, the Pancontinental Cubmarine and the Aero-Craft Aero-Coupe. The fourth company to standardize on a plane with this engine is the Bush Aircraft Co. for the fall of 1933. It is anticipated that the entire output has already been manufactured. The output is now approximately 10 to 12 engines a week and that will be increased gradually until it is one each day. The engine sells for \$2,250.

Design of the Scarab engine was started by W. O. Warner in October, 1930. Now, after much testing and after a few minor changes, production is under way. The engine is a seven cylinder, water, air cooled, radial of conventional design, rated 120 hp. at 1850 r.p.m., though it has developed 125 hp. at 1850 r.p.m. Dry, without starter or hub, it weighs 250 lb. or 245 lb. per rated hp. The compression ratio is 5.2 and it operates at a mean effective pressure of 132. The displacement is 405 cu. in. and the bore and stroke 4.75 in. by 4.25 in. It is stated that the specific fuel consumption is 64.0 lb./hr. at 487 lb. per hp. hr., or 6.2 gal. per hr. and the oil consumption is .088 lb. per hp. hr. The engine is quite small and presents a very clean appearance. The overall diameter is 35.5 in. while the overall length is 37.5 in. All components are placed in the rear end, according to the war, designed with a view to minimizing the amount of heat required for installation and to make it comparatively easy to streamline the cooling.

AC Spark Plugs Used

Cylinder barrels are chrome molybdenum forgings, with the heads are of 70% aluminum alloy. Adequate cooling fins are provided; they extend over the head and around the valves. The combustion chamber is hemispherical with two valves, one intake, and one exhaust at the sides, and with two AC spark plugs, one in front and one in back, lower cylinder opposite. Aluminum bronze valve seats are used into the head; the two valves are of the loop type and 5/16 in. apart. They are 1 1/2 in. diameter and have a 10° of 480 in. The intake valve is of tapered steel while the exhaust valve is a solid alloy. The double valve opens in

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The Aero Craft "Aero Coupe"

All-Purpose Three Place Biplane is Powered with a Warner "Scarab" Engine and has a High Speed of 115 M.P.H.

By JOHN T. NEVILL

ALSO GRANT Manufacturing Co., the latest addition to Detroit's aircraft manufacturers, recently test flew its latest product, a three place, convertible cabin biplane, known as the "Aero Coupe". The tests were made by Capt. Ernest W. Brown, president, and Capt. Carl B. Eganer, secretary of the company. The plane, Captain Brown said, was in great production as soon as the tests were accomplished.

The company exhibited its craft for the first time publicly at the All-American Aircraft Show, recently held in Detroit. Because of the speed with which it was assembled for the test, it was deemed advisable to re-assemble the plane before flight tests were made. A second plane of the same model is nearing completion.

The Aero Coupe is an all purpose biplane, intended especially for fast express or air mail feeder line service. It was designed by Captain Brown and Eganer, both officers of the 107th Observation Squadron, Michigan National Guard, and World War fliers. Dwight Houghtaling, formerly with Grumman Aircraft Corp., and the Overmaster Aircraft Manufacturing Co., did the engineering work.

The Aero Coupe is a single bay design, with a Clark Y airfoil section. The wings have no taper, neither in plan nor in section. Rectangular spars and trailing type upper ribs with plywood covering, comprise the principal wing structure. Three bays are made in the drive section, which is double and made of square section steel. MacPherson rods are placed for use in forthcoming models, although not at present. The wings are of equal chord. Drag wires are of spruce with steel rod end fittings. The wing web and cap strips also are of spruce. The leading edge, top and bottom, forward of the front spar is covered with cloth duralumin, the leading edge being a triangular section

of sheet aluminum. The wings are covered with Flightex, the fabric being machine sewed and stretched by the "diaphragm" method. Five cords of sheet dope and two cords of screen Berry Hiram's lamp, complete the fabric on the wing surface. All woodwork on the wing interior is painted oil, the fittings being protected with Berry's red oxide primer.



Front view of the "Aero Coupe" powered with a 110 hp. Warner "Scarab" engine.

and stabilizer, are aluminum joined, and streamlined.

Wing fittings on the Aero Coupe are all internal, and of conventional design. The wings are covered with light or red and the plane is equipped with running lights. Wing tips are constructed of aluminum tubing. The ailerons of the outboard balance type are of narrow chord, comprising but 12 per cent. of the wing surface. They are hinged to the wing at the bottom of their leading edge, the gap in the upper surface being closed by a sheet of duralumin, making the joint as streamlined as possible.

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Capt. Ernest W. Brown, president of the Aero Craft Mfg. Co., standing at the wing of his company's new product, the "Aero Coupe".

Bowser Fueling Equipment for Airports

By C. P. GRIFFITH
Chief Engineer, S. F. Bowser & Co.

THE FIRST step taken by S. F. Bowser & Co., Fort Wayne, Ind., in the task of developing a suitable type of stationary equipment for aviation fueling purposes, was to study the existing conditions. The company's experts assembled experts in commercial aviation, and visited fields in operation in order to determine just what the conditions were that must be met, and what type of equipment would best meet those conditions, not only at that time but also in the future.

From this study a number of fundamental requirements seemed to stand out:

1. Ability to deliver any quantity desired in a steady stream at the point of delivery.
2. Speed to compare favorably with the speed now available in fueling automobiles.
3. Positive control at the point of delivery to avoid over-fueling tanks and fire hazard.
4. Accuracy in measuring fuel delivered.
5. Elimination of moisture, water and dirt from gasoline.
6. No ground hazard.
7. Large serving radius.

While all of these features may be present in greater or lesser degree in either stationary or mobile equipment, there are certain fundamental differences between stationary and mobile equipment which should be considered.

Stationary

With stationary equipment, plane must be taxi'd or taken to fueling point.

Stationary equipment has more leakage for storage and fueling purposes.

Continuous fueling capacity limited only by size of storage tank.

Low initial cost.

Low operation.

Exceedingly safe against explosion.

May be installed in serving point from the air to visiting planes so that in landing they can taxi in position for service.

No ground hazard when properly designed.

Mobile

With mobile equipment, service may be taken to the plane. There must be storage and pumping equipment by means of which the mobile equipment can be filled.

Any mobile outfit is limited in storage capacity and consequently in fueling capacity without replacement.

High initial cost.

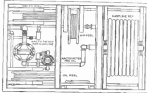
Heavy upkeep expense.

Large depreciation.

Difficult to handle in wet weather.

Cost of flying field.

These considerations convinced Bowser & Co. that there was a real place for a suitable type of stationary equipment for



Drawing of the inside of the Bowser fueling pit for gasoline, oil, water and air service.

aviation fueling purposes and the equipment described in this article is of that type.

It consists of one or more fueling points on the flying field connected to a central water-proof box tank with the ground level, connected to a pumping unit located in the hangar or oil house.

Each pit or fueling point has a fueling coverage of a circle 100 ft. in diameter with the pit in the center and it is constructed that when the covers are closed, no ground hazard is created and planes can taxi directly over the pit.

In the pit is located a hose reel accommodating 50 ft. of gasoline hose. The hose is full of gasoline at all times and

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Drawing showing the installation of the Bowser fueling system.

The "Starling" Biplane

A Three Place, Open Cockpit Biplane of Conventional Design and Construction Powered with an OX-5

By H. A. LINDBERGH

THE "STARLING", which is manufactured by the Starling Aircraft Co., is the second plane to be built in Minneapolis, Minn., in quantity production, the first was the Mohawk "Puck" produced by the Mohawk Aircraft Co. Although the first Starling is powered with an OX-5 engine, a detachable engine mount is provided so that any type of engine up to and including the Wright Whirlwind can be installed if desired. This new production plane is a three place, open cockpit biplane of conventional design and con-



Last quality craft of the "Starling" powered with an OX-5 engine.

struction, having a steel fuselage, wood wings, split type landing gear and other general features of construction common to the type of light commercial plane.

The first Starling was officially test flown recently by Gene Bush of the World-Chamberlain Airport, during which the plane took off after a comparatively short run, climbed to about 100 ft. in the first minute and was then put through a series of maneuvers to test the construction and the reaction of the plane under severe conditions. The Starling was found to be under perfect control at all times and responded to the use of the controls with little physical effort. It is designed to the designer of the Starling.

As in a large percentage of the planes built in this country the fuselage and the tail group are built up with welded steel tubing, the fuselage being of Pratt truss construction. The horizontal stabilizer is adjustable in flight with a single wing being used, as well as for the ailerons and the elevator. The rudder is actuated by cables controlled by foot pedals or by pulleys as necessary on any part of the plane for hydraulic controls. The tail is made of oak with a steel tube and a rubber wrapped, in summary tail also being provided at the end of the fuselage for emergency use. In using a modified Keweenaw section for the lower wing it is claimed that a fast take off and slow landing is possible, while a modified Clark Y section for the upper wing gives great maneuverability and a higher top speed. The upper wing is in three parts, a five foot center section with two outer panels while the lower wing is built up of two panels. The stressed wing construction is constructed with wood ribs and metal spars, the leading edge of the upper wing being made

of duralumin while that of the lower wing is plywood. Metal bolts are provided on the forward end of each panel of the lower wing for ease in handling on the ground. The various interplane struts are of the X type made of sorted plain tubing and aluminum wires are used for bracing. The center section is wide enough so the cabin struts, attached to the upper fuselage longerons, can be placed in such position as to allow ready access to the passenger's cockpit, and in addition the interference with the pilot's forward vision is almost entirely reduced.

The wing panel's and passenger's seats are completely upholstered and the seats are fitted with comfortable cushions. Both at the wheelchairs are so arranged on the fuselage as to afford adequate protection and yet not too large so as to add too much unnecessary parasite resistance. To the rear of the pilot is a 36 in. by 24 in. by 14 in. baggage compartment. Right or left throttle is equipped with dual control being standard equipment. Instructions as required by the Department of Commerce are furnished, including the first aid kit and the extinguisher. The head rest, instead of being short as is customary on most planes, hinges on the back from the rear of the pilot's cockpit to the vertical line. As is true with the majority of the latest production planes, a door is provided on the left side of the fuselage to allow quick access to the passenger's cockpit.

The radiator on the OX-5 model is placed in the nose of the plane to eliminate the objectionable protrusion and in addition the feature of construction advances the general appearance as well as reducing to a minimum the interference



Side view of the three place OX-5 powered "Starling" biplane

with the forward nose of the pilot. The engine belt is built up of oak with steel longerons, bolts being used under the heads of the mounting bolts and under the engine feet while heavy steel springs are placed under the rear of the bolts to dampen engine vibration. A 30 gal. gasoline tank is mounted in the fuselage immediately to the rear of the engine in such a position that positive gravity feed is possible. Through this arrangement of installing the tank in the fuselage instead of under seats in the wings, it is possible to build a more inherently stable plane in that it is more the trend where all weights are concentrated. A Hamilton wood

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Applying Racing Practices to Military Designs

By TEMPLE JOYCE

WITHOUT DOUBT, the British last year, proved that with the best brains available in the air-cooled and water-cooled engine fields, as far as high speed racing results are concerned, the water-cooled engine still stands in the lead. The reason for this evidently is due to the parsimony of the air-cooled engineers to continue the rebuilt design in its original form, which due to its large projected area makes it impossible to properly cool or streamline sufficiently to get speeds comparable with the small projected area water-cooled engine. The reason, however, obtained with the British De Havilland "Tiger Moth" with its air-cooled engine shows promise of possible improved results along these other than the rebuilt type. Development of speeds under 200 m.p.h., the rebuilt air-cooled engine per mile characteristic of plane construction and performance that lead towards a really superior product for all around use. Where speed alone is desired, and all other factors such as maneuverability, maintenance, reliability, are considered of minor importance, the water-cooled engine stands paramount.

If this premise is correct, then it is very easy to cover the two types of engines to their respective military duties, as we well know that during the war there existed two classes of planes—the light, highly maneuverable combat or dog fighting type, generally built around an air-cooled engine, and the high-speed, exceptionally sturdy job capable of flying at high velocities, more or less known as the "hunter type."

These two types of airplanes required not only distinct differences in the manner in which they were flown but actually



A low time dispatch "Glenn" powered with a 210 hp. Chrysler rotary engine.

from a war standpoint required pilots of a different temperament.

The highly maneuverable type of plane was generally manned by an individual who found nothing and was ready to combat anybody or any group regardless of number, purely for the love of the combat. He was exemplified in the young dash type of British pilot. The high-speed dog type of plane was generally manned by a calculating leader type of individual, who had back of his mind always the old adage that "the who fights and runs away, lives to fight

another day." In other words, he maneuvered carefully, always into a position of advantage before striking his enemy by using, a dive from superior altitude, the use of his tail, his wheels, or displaying a sharp upon whom the enemy would concentrate, thereby drawing attention from himself.



A Curtiss "Hawk" powered with a Curtiss D-12 engine.

I do not mean by this that the model type of pilot did at some time use the same methods at the beginning of an encounter, but the difference is that after the high dog type of plane had once fired on the enemy, due to its extreme high speed and lack of maneuverability it did not stay to make whereas the highly maneuverable aircraft, if it missed its first attempt at firing would immediately circle and once maneuvering with one pilot outnumbered the other all brought his opponent down. If the high speed machine when it is within 200 or 300 yd. of its objective is detected by the pilot in the other plane, there is no doubt that its aircraft is immediately lost because it cannot maneuver as fast or sharply enough to keep its gun on the enemy, nor can it stay to combat because of the danger of being outnumbered, therefore it must withdraw and wait for another opportunity for surprise attack. I am describing here only the other angle of these two planes; the difference side is different.

As a majority of the pilots during the war were taught down from surprise attack, whether by a high speed dog type of plane or the highly maneuverable, an accident will result be forced to pay a great deal of attention to the faster in air fighting. It is also unquestionable that the higher the speed of a plane the greater chance it will have to possess as its enemy without being detected.

One has only to go into the air and operate at sound as thousands feet over the clouds of days trying to keep in eyes on a number of machines that are appearing in his vision, to realize how difficult it is to know what each machine is doing, where they are going, and to later pick them up if another plane is their flight. One's ability to lose sight of

a plane in a very definite order of the sky is surprising, and to rapidly with the plane at other times, jump into your vision at close range from a corner of the sky that a scout before seemed absolutely clear is quite startling. These incidents hold true at speeds around 160 m.p.h. during the war, and it is easy to realize how much more aggravated they could be at speed of say 300 m.p.h. Imagine a confusion when a group of fighting planes were involved at the rate of 300 to 350 m.p.h., and the enemy with a squadron of machines capable of making 400 to 500 m.p.h., carrying only one gun and a small amount of ammunition were operating at the same velocity. The rapidity of approach of these planes would be so great that undoubtedly from other times they could snap upon the 300 m.p.h. planes before they knew what was happening. A pilot in a single seat machine was not by his machine, look for enemy aircraft ahead, and also keep his tank stretched to the rear for long enough periods to absolutely secure himself against surprise from that direction. In other words, it is just impossible for a pilot to look to the rear enough to absolutely protect himself and at the same time carry on his other functions. This means that there are quick periods when the tail of a single seater is not being watched, and a plane capable of making 300 m.p.h. could, being the source of a dog's operations over where there was no line or clouds, have unassailable chance to pick off some machines without being detected or interrupted.

If we could imagine another Western Front War with the Central Powers having present planes of the class of the existing single-seat fighters, and the Allies had at their disposal, we shall say, fifty Supermarine Schneider Cup racers fitted with one machine gun very easily installed, these planes could operate from a lake or river adjacent to the front, they could maneuver and carry out whole army reconnaissance, prey upon enemy aircraft that happened to be sleeping within their path, and cover be launched by opposing aircraft.

The fastest speed of any existing present plane today in a vertical dive is around 300 m.p.h. By the time it is flattened out, its horizontal flight speed drops below 250, which would mean that a squadron of supermarine racers fitted out as light pursuit planes could never be attacked if the pilot was fast; they actually could never be interrupted. This type of plane undoubtedly would and would not go to high altitude where it would be outnumbered and outperformed by the lightly loaded air-cooled fighters, but there are many features of aerial warfare that prohibit planes from going beyond 4,000 to 5,000 ft. such as some classes of photography, fuel spilling, cargo and army reconnaissance, landing, air-to-air refueling, etc.



The De Havilland "Tiger Moth" powered with a "DH" six line air-cooled engine developing 150 hp which made a speed of 256.5 m.p.h.

There has been a tendency in this country to build fighting planes capable of carrying hundreds of ammunition and unreasonable loads of gun for long distance fights, and in addition, a number of unnecessary provisions for landing, etc., with the load factors being at the maximum load condition, which unquestionably reduced the high speed to very little more than our observation planes. Furthermore, with the desire for economy that swept the United States after the war, our designs were laid out for production, with square corners and wide winging, etc., certainly not sleek streamline forms. There is no doubt that by applying racing practices



A Wright "Corsair" powered with a Pratt & Whitney "Wasp" engine.

and using the existing 420 hp. water and air-cooled engines, eliminating part of the extremely high military loads and structural reinforcements in the structure of the plane (which, however, would increase the production cost), speeds of more than 300 to 350 m.p.h. is more of existing single seat records could be obtained. With additional study on cutting down the size of the projected area of engines, increasing their power slightly, and possibly in the future, reducing the size of the pilot, finding his weight to occupy specifications, speeds could be looked forward to around 350 to 400 m.p.h. The discrepancy between the top speed and existing racing plane records of over 300 m.p.h., is due to the fact that racing planes land around 100 m.p.h., and use 1800 hp. or more, whereas military types land around 60 to 80 m.p.h.

It is not recommended that the services adopt racing planes as standard single seat fighters, but racing practices applied to service designs will be distinctly beneficial. Any activity that will increase the performance of all the existing classes of planes whether single seat fighters, bombers, etc., as being so and should be, ought to receive the greatest support of the military services.

California Still Leads in Number of Planes With Illinois Now Second and Texas Third

A NEW compilation giving the status of aircraft in this country by states and extended to May 1 has been issued by the Department of Commerce. The statistics show 3,388 identified, licensed, and temporarily anchored planes. The states have more than 100 planes, California being well in the lead with 1100, Illinois second with 770, and Texas third with 747—leading New York's total of 243 by one. The other six states of the first 10 and their totals are: Michigan 250, Ohio 190, Missouri 172, Pennsylvania 166, Oklahoma 206, and Kansas 192.

The compilation follows:

STATUS OF AIRCRAFT BY STATES MAY 1, 1932

	Identified	Licensed	Number	Total
ALABAMA	1	0	4	5
ARIZONA	1	0	6	7
ARKANSAS	19	11	4	34
CALIFORNIA	171	114	219	504
CAROLINA N	0	19	0	19
CAROLINA S	3	1	0	4
COLORADO	0	9	0	9
CONNECTICUT	0	19	12	31
DAKOTA N	16	9	0	25
DAKOTA S	6	3	0	9
DELAWARE	0	2	0	2
DIST OF COL	0	10	2	12
FLORIDA	35	18	9	62
GEORGIA	16	9	1	26
IDAHO	7	129	19	256
ILLINOIS	74	12	12	98
INDIA	29	34	8	71
KANSAS	14	7	20	41
KENTUCKY	4	1	0	5
Louisiana	18	9	12	39
MAINE	1	4	3	8
MARSHALL ISLANDS	12	36	17	65
MARYLAND	6	11	9	26
MASSACHUSETTS	0	1	0	1
MICHIGAN	18	20	14	52
MINNESOTA	1	4	1	6
MISSISSIPPI	47	0	37	84
MISSOURI	4	11	21	36
NEBRASKA	11	16	25	52
NEVADA	2	6	2	10
NEW HAMPSHIRE	0	1	0	1
NEW JERSEY	0	22	24	46
NEW MEXICO	2	1	2	5
NEW YORK	58	42	117	217
OHIO	14	58	12	84
OKLAHOMA	93	12	43	148
OREGON	7	16	28	41
PENNSYLVANIA	99	52	49	199
RHODE ISLAND	1	0	0	1
TENNESSEE	14	10	6	30
TEXAS	129	47	90	266
VERMONT	1	0	0	1
VIRGINIA	6	19	14	39
WEST VIRGINIA	0	7	5	12
WASHINGTON	10	14	21	45
WISCONSIN	30	22	39	91
WYOMING	2	1	0	3
YUCCA	1	0	0	1
HAWAII	0	0	2	2
ALASKA	0	1	7	8
TOTAL	3,388			

Junco W-34 Plane Built for Australian Company Uses a Bristol Jupiter Engine

A BRISTOL Jupiter engine has been installed in a Junco W-34 monoplane constructed for the New Guinea Gold Co., an Australian concern which is at present prospecting for gold in New Guinea. The gold mining area is about 150 miles from the coast at an altitude of about 10,000 ft. This is no road or even a reasonable track, so that when the plane is to be transported by carriers it is necessary for them to carry it for 30 days, allowing eight days to get there and eight days to return. Part of the track over the mountains is a steep climb and must be climbed by hand themselves up by means of ropes. As a result, the round trip by carrier is probably about three



New Guinea gold prospecting will be carried on from the end of this Jupiter-powered Junco.

weeks, allowing one to start with only a 40 lb. total load and should, upon completion, be ready to leave. On this service there is no possible landing place between the two terminals. The W-34 is a low wing monoplane of duralumin construction, with both wings and fuselage covered with corrugated sheet duralumin. It is primarily a mail and freight carrier, with the pilot sitting in the open in front of the mail compartment of 370.5 cu. ft. An 80 gal. fuel tank is located in the center section. The plane has a span of 60 ft. 2 in. and a length of 26 ft. 9 in.; the wing area is 933 sq. ft. The W-34 weighs 3,130 lb. empty and carries a useful load of 1,200 lb. giving it a total weight of 4,330 lb. It has a lift speed of 117 m.p.h. and a cruising speed of 200 m.p.h. It burns 40 m.p.h. and develops 3,200 ft. to 5,500 ft. (1,600 meters to 2,600 meters) in 10 min. The ceiling is 18,700 ft.

George Titterton is Now Project Engineer Of Keystone Aircraft Corp., Bristol, Penna.

GEORGE TITTERTON has joined the Keystone Aircraft Corp., Bristol, Penna., as project engineer. Of late Mr. Titterton has been cooperating with Prof. Alexander Krueger of New York University in the preparation of a series of 40 tables on stress analysis appearing in AVIATION, Bulletin that time he was in the engineering department of the Bureau of Aeronautics, Navy Department, at Washington.

Gray Goose Airlines, Inc., Offers a 55 Mph. Sightseeing Trip Over Chicago Twice Daily

A 55 m.p.h. sightseeing trip over Chicago is now offered twice daily by the Gray Goose Airlines, Inc., of that city. The Ford-Stout 10-engine plane of the company, which seats 14 passengers, leaves the Chicago Municipal Airport at 10:30 A.M. and 3:00 P.M. each day. Night flying will be added whenever desired by patrons, officials announce.

National Model Airplane Meet Scheduled To Be Held at Detroit, Mich., June 29-30

MOORE THAS a thousand boys from every place in the United States between Portland, Maine, and Honolulu are expected to participate in the National Model Airplane Contest to be held in Detroit June 29-30 by The American Boy Scouts. This summer, which organized the Airplane Model League of America and has built its membership to more than 150,000 in eight months, has been designated in the National Aeronautics Association to conduct the contest in St. Louis Indoor Trophy, the Midland Outdoor Trophy, and the new model competition.

Chief Longshore of Detroit is the present holder of the Midland Trophy, and Charles Dybwig, Detroit, of the St. Louis Trophy. To stimulate interest in these contests, trips to London, Paris, and Geneva are offered to boys under 18 years in the 1932 contests. The winner of the new model contest is to be held for the first time this year, with prizes in Los Angeles to attend the National Air Show. There are also \$1,000 each prize and 100 medals to be presented.

Many Newspapers Cooperating

Many of the estimates in the contest will be sent to Detroit as official representatives of the cities or districts in which they live, through the 82 newspapers cooperating in the publication of the contests. Each of these papers is to hold preliminary contests to select its own champion. Any model builder in the United States may enter the national trophy, however. The cost will be approximately \$50 for the two-day contest—this to cover tools, materials and all such expenses and transportation. Prizes are being made to obtain reduced rates from the railroads, so that every person attending the meet should apply for a certificate when buying his ticket to Detroit.

Candidates may obtain entry blanks from any of the newspapers, requesting four copies, to the Contest Director, The American Boy, 655 Lafayette Boulevard, Detroit. Entry blanks should be returned not later than June 30. It is planned to charge a small entry fee, which will be returned when the contestants actually enter a model in a contest except if they quit before June 31; that it will be required for the builder to enter one of the three contests without being actually on the ground. For flying contests, however, builders must handle their own models.

Pioneer Instrument Co., Brooklyn, Issues Circular Describing Two of Its Products

THE PIONEER Instrument Co. of Brooklyn has published two new circulars, one describing its Speed and Drift Indicator and the other its Altimeter. The Speed and Drift Indicator is a Drift Angle Meter, as described in detail giving the principle of the operation and method of installation. In the other pamphlet Pioneer Altimeters are described and recommended instructions given. These pamphlets may be obtained from the Pioneer Instrument Co., 534 Lexington Ave., New York, N. Y.

Frank Baker Company Becomes Build Plane Distributor With First Airspeed Received

FOLLOWING ACQUISITION of the sales rights for Build Aircraft in California, Arizona, and Nevada by the Frank Baker Aircraft Co. of Culver City, Calif., a Build free plane Airspeed was shown to Los Angeles from Marysville, Wash. by this plane, chief pilot for Frank Baker.

Mr. Baker was accompanied throughout his entire flight by

his 35 yr. old daughter, Esther, a Los Angeles high school student. The trip was made in 35 flying hours. The new cabin airplane is to be used on a demonstration trip through the Western States, it is said. FRANK BAKER is also West distributor for Culver City.

Irwin Aircraft Co. of Sacramento, Calif., Builds a Meteorplane for Texas Company

IRWIN AIRCRAFT Co., Sacramento, Calif., recently completed a new Meteorplane for the Texas Pacific Coal & Oil Co., maker of Amco lubricating oils. This little lightplane weighs only 235 lb. empty and 575 lb. with full load. It is stated to have a top speed of 90 m.p.h., a cruising speed of 75 m.p.h. and a landing speed of 20 m.p.h. The span of the



New Meteorplane built for Amco manufacturer.

lower wing is much greater than that of the upper wing, and there are ailerons on the lower wing only. The ailerons are differentially controlled. A 70 cu. ft. four cylinder, two-cylinder engine in the power plant. It is rated at 30 hp. at 1750 r.p.m.

As the fuel consumption is but 1/15 gal. per hp. it is claimed that the plane has a range of 400 mi. The latest model Meteorplanes have reserve windows provided over all pillars, besides air wings for emergency in landing, fitting on under side of lower wing for tying place down, baggage compartment, emergency lights, and a complete instrument board. The standard wheel release is red fastings, yellow wings, and black trimmings.

Bird Wing Commercial Airplane Co. Issues Pamphlet Describing Its Imperial Biplane

THE BIRD WING Commercial Airplane Co., St. Joseph, Mo., has prepared a pamphlet describing the Bird Wing Commercial Imperial OX-8, open cockpit lightplane. This plane is planned to sell for \$2795. A number of this type have already been built and are being used for instruction by the Bird Wing School of Aviation. It is of conventional design with wooden wings and welded metal tube fuselage, fabric covered. The landing gear is of fixed axle type and the tail surface has built safety of steel tubing covered with fabric.

Mid-Plane Sales & Transit Co., Minneapolis, Appointed "Command-Air" Distributor

THE ARKANSAS Aircraft Co. of Little Rock, Arkansas, has appointed the Mid-Plane Sales & Transit Co. of Minneapolis, Minn., (also distributor of the French Cessna) as the distributor of the Command-Air in Minnesota, Wisconsin, northern Iowa, North and South Dakota, and Montana. In addition to being used as demonstrators, the Command-Airs will be placed in service for student instruction and other such activities.

Novel Type Test Bed With Jupiter Engines In Tandem Is Developed by the Dornier Co.

A **SOVELA** type of test bed has been developed by the Dornier Co. of Germany. As the engines on all large modern flying boats are mounted in tandem in a nacelle above the upper wing, a similar nacelle has been built up and mounted on a hydroplane. The nacelle mounts two geared Jupiter engines with their accessories mounted similar to



Tandem Dornier Jupiter-Hel Jupiter engine installation, and power on the new test bed

those on the new Dornier Super Wal. It is understood that the test bed has had a run at 200 hr. in water at a speed of 75 m.p.h.

Form the California Aerial Transport Co. For General Flying and Instruction Work

THE LATEST addition to Los Angeles flying organizations is the California Aerial Transport Co., located about seven miles west of town on Pico Boulevard.

Commercial flying and student instruction is now being carried on with an equipment of two Cessna 440s and two Airplanes. Soon after flying operations commenced, a third plane was needed and was flown to Los Angeles by H. C. Lippitt of Clover Field, Southern California Travel Air distributor, who placed the plane in service at the Los Angeles field within 24 hr. and 50 min. after leaving the Wichita factory. A Whorford engine plane it is to be equipped soon for advanced instruction.

Partners of the company are G. A. Dudley, Laurence H. Talbot, and W. E. O'Neil. Pilots are F. H. Peters, Harry Gray Carley, and Leonard Paul Hovary. Lend Lease is used to hold the test spot record by having made 55 consecutive turns from an altitude of 14,500 ft. in 2 min. 50 sec.

Present hangar space accommodates five planes, a shop, and complete equipment for ground route.

Department of Commerce Now Lists Total Of 1,975 Airports and 4,000 Landing Fields

THE DEPARTMENT of Commerce has now listed 1,975 airports in the United States, with 1,000 other fields on which planes can land. Some of these ports offer only landing facilities with machines and other supplies near at hand, but 231 ports are now equipped with the latest aero material aids for both day and night flying. Intermediate landing fields, along regular mail routes, marked and lighted by the Department of Commerce, now number 163. There are at present in operation, also, 75 fully equipped commercial fields. California, with 113 municipal and other airports leads at the state in providing accommodations for travel. Pennsylvania, third in rank, with 64 fields, has 24 airports fully equipped by the Department—more, in the report, than any other state. In addition, Pennsylvania has two ports equipped for night flying. Illinois, with 58 airports,

of which 23 offer facilities for night landings, and Ohio and Oklahoma, each with 43 fields, follow next in rank. Wyoming has the highest proportion of modernly equipped fields, 17 out of 21 in that state, offering all night service.

Harry T. Booth Establishes Consulting Office at Roosevelt Field, Long Island

HARRY T. BOOTH, one of the best known aviation engineers, has announced the opening of a consulting office at Roosevelt Field, Westbury, Long Island. Mr. Booth is 39, an old Curtiss designer, having joined that company in 1911. In 1921 he was in charge of the design of the Curtiss racer in which Bert Acosta won the second Pulitzer Prize—the then record speed of 176.7 m.p.h., at Omaha.

In the fall of 1921, Booth and "Mick" Tharion joined forces under the name of the Bee Line Co. of Hammondsport, N. Y., where they built the BE racers for the Navy. The following year Booth and Tharion were in charge of the design and construction of the Wright 75, now owned by the Navy in the 1923 Pulitzer race at St. Louis. The latest Bee Line had a fourth in the race with speeds of 230 and 230.6 m.p.h.

Following the 1925 Pulitzer race Booth and Tharion joined Chas. Kirkham, where they designed and built the Vought flying boat and during 1927, a J. (A) Walker monoplane.

Wayco Air Service, Inc., of Detroit, Mich. Named Distributor of Bellanca Monoplanes

THE WAYCO Air Service, Inc., of Detroit, its long-time distributor for Bellanca monoplanes in Michigan, Illinois, Northern Indiana, and Northern Ohio, Edward F. Solis, president of the company, announced recently.

William B. Brook, co-pilot with Solis on the flight to the Prize of Detroit, has been appointed general manager of distribution. Solis said, and will shortly place the retail Bellanca monoplane here from the fleet office which deliveries will begin.



Like a Model

So well equipped and test out is the Wayco's Bellanca biplane, that it presents the appearance of a model, in the photo shown, where it is viewed from the rear. Hotel, other buildings, service stations, and several airplanes make this airport one of the most up-to-date in Detroit.

THIS IS THE DAY OF METAL

All the experience of the past points to the necessity of metal construction in vehicles for transportation. They must encounter strains and stress under extremes of weather and use, yet perform their work safely and economically.

That is why the modern vessel is built of metal. The railroad car. The street car. The automobile body.

Each of these has a structure of metal and a covering of metal. Because economy and safety from structural weakness and the fire menace demand it.

The type of work the airplane does, and the conditions under which it operates, make the use of metal at least as necessary as in other vehicles.

It is gratifying to us to see the use of all-metal construction growing in this country. Not merely because it confirms our judgment in selecting metal over any other available material. But also because we believe it will further the cause of aviation by increasing the likelihood of safe operation and by permitting economies which will add to the prosperity of operators.

THE STOUT METAL AIRPLANE CO., Division of FORD MOTOR COMPANY, Dearborn, Mich.



New 140 Acre Airport is Completed Near St. Louis by the Parks Airplane Company

RAPID DEVELOPMENT of Parks Airplane, Inc., and Parks Air College is facilitated by the completion of their new airport, only 30 miles by automobile from downtown St. Louis. It is on the Illinois side of the Mississippi River, easily accessible by auto or train.

The field has been developed under the direction of Oliver Parks, vice president of Parks Airplane, Inc., and H. F. Mansueti, president. Frank White is dean of the college. He was formerly general manager of the Marshall Flying School, Marshall, Mo. Cooperation was obtained from the East St. Louis Chamber of Commerce and East St. Louis merchants and business men.

The field is located five miles due south of the center of St. Louis, east side of river, just off State Highway No. 5. The field comprises about 140 acres of flat ground with natural drainage. About 300 additional acres are under option by the owners. The parking space adjoining the field accommodates 1500 automobiles.

During the past several weeks some buildings have been completed, including the administration building and general



Parks Air College Travel Airs based up at Parks Airport, St. Louis

offices, class rooms for students, fully equipped tool shop, a restaurant, a hangar with capacity of 50 planes, another hangar 50 x 75 ft. in size, and a students' dormitory. Over \$50,000 has been spent for equipment alone, not including the cost of the field. Two demonstration cock for 40 students, and two more hangars, are now under construction.

A gasoline storage tank with a capacity of 10,000 gal. has been installed near the tracks of the Catherine, Waterloo, and East St. Louis Railway, adjacent to the field, with a pipe line to the head of the runway where the planes are stored. The first of these hard surfaced runways, 48 ft. by 2700 ft., designed to accommodate the largest freight and passenger planes, is finished. Runway lights are being installed. By June 15 the field will be completely equipped for night flying with flood lights, obstacle lights, and beacons. The Parks Air College now has 145 students. New students are being admitted as facilities are available.

White and Brayton Direct School

The flying school is under the direction of Derek White, dean of the college, and Clyde E. Brayton, business controller, who is chief instructor and field manager. He expects a total record in 1937 with 604 hr. flying time during the 12 months. Claude Steffing, first assistant instructor, was formerly for three years chief instructor at Marshall Flying School, Marshall, Mo. His other flying instruction experience in addition to mechanics, classroom and ground instruction.

The equipment at the field includes 15 new OX-5 Travel Airs in addition to two new-arrived Whitehead Travel Airs, a Canam Travel Air, and a new Model 6000 Travel Air Transport monoplane, which seats six and has dual control, powered with a Whitehead engine.

Not For Sale

SINCE THE publishing of the announcement of the Waupacape Aeronautical Engineering Corp., manufacturer of the Travelbook monoplane in the May 14 issue of AVIATION (page 1445) we have received several inquiries for additional data regarding the several plans. It is hoped that the information will soon be forthcoming, but in the meantime, for the benefit of those that made such a query, the Waupacape Company has added to its literature that it will under no circumstances sell one of its planes for use on any long trans-continental flight.

German Glider Experts Will Open Detroit Air-Olympics With Engineless Craft Flights

THE FIRST official public demonstration of gliders, America will be the opening feature of the Detroit Air-Olympics, the game chosen to cover the fourth annual State Air Tour, the Gordon Bennett International Balloon Race and the Royal National Model Airplane Contest. The Air-Olympics are to be held in Detroit June 28.

The demonstration will be staged by Peter Henschel, Dr. Paul Landerbach, and Capt. Paul Heide, German gliding experts, who are in America to exhibit their airplanes and to enter. Although the Germans have been in the United States for several weeks they will withhold their first public exhibition until June 28, in accordance with a contract signed with the Aero Club Events Committee of the Detroit Board of Commerce, sponsors of the Air-Olympics. Announcement of the exhibition of the German experts at one of the major features on the day's program was made by K. H. Schmitt, assistant manager of the airport center for the event.

Six gliders, brought to America from Germany, will be brought to Detroit by the two for exhibition. One of the machines built by Fiedrich Schulz, another German gliding expert, is the craft in which Schulz soared to a world record of 14 hr. and 20 min.

Planes Will Tow Them into Action

Early on the morning of the Air-Olympics, prior to the start of the tour, according to present plans, the gliders will be towed by airplanes, will take off. As no gliders are expected to be towed, the pilot of the glider will pull a line, in towing the tow-ropes and releasing the glider, according to his skill.

All three of the German teams to America at the airport of J. C. Penney, Jr., and the American Meteorological Club, Berlin said. One of them, Henschel, is holder of the world's record for gliding with a passenger. The next 5 hr. and 50 min., was set last summer in the Crimea.

Shortly after the close of the Detroit Air-Olympics in Germany, it is understood, will attempt to set a new world record somewhere in the vicinity of Detroit. Henschel, incidentally, now has more than 1000 gliding and soaring flights with a total membership of more than 20,000.

As an added feature of the gliding division of the program, several students of Detroit's Cox Technical Flying School will demonstrate the "Kaiser", a glider that is themselves. This demonstration will be made under the tutelage of Harry Kuehner and A. D. Althouse of the Cox Technical High School faculty.

The Kuehner weighs but 80 lb. It is of light construction with a 20 ft. wing spread. The wings are also shorter than four feet wide and the fuselage is 15 ft. long. It is built 400 lb. to build, it is said.



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AN organization of specialists experienced in the various angles of air transport and aircraft operations. More than a firm of consulting engineers, — its activities include also traffic development, organization of flying operations, accounting and advertising.

Among the stockholders are included leaders in aviation as well as representative men from banking and other fields of business, making it an independent and unbiased organization. Equipped to undertake: Surveys of proposed air routes . . . Surveys and analyses of air traffic . . . Estimates of investment for aircraft operations . . . Estimates of aircraft operating cost . . . Selection of flying and base equipment . . . Complete organization of flying operations . . . Selection and inspection of operating bases . . . Inspection and approval of airplanes, engines and equipment . . . Certification of performance of airplanes and engines . . . Adaptation of airplane design to operating requirements . . . Installation of accounting and cost systems . . . Planning and supervision of advertising and business development.

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THANK YOU for reading AVIATION

Alexander Company Orders 1,000 Flocos Engines from Frank L. Odenbreit, Inc.

AN ORDER for 1,000 airplane engines, involving total expenditures of \$5,750,000 has just been received from the Alexander Engineering Co. of Colorado Springs, according to Frank L. Odenbreit, Flocos engine manufacturer, Los Angeles, Calif.

This is said to be the largest single business transaction involving the sale of airplane equipment in the history of commercial aviation. The contract called only for a minimum delivery of 50 engines per month, the first shipment to be accomplished by the beginning of June.

Prior to obtaining this order, Thomas M. Hardesty, director of sales, T. C. Alexander, chief test pilot, and W. M.



Frank L. Odenbreit, Flocos company president, inside the demonstration plane in which are seated Thomas Hardesty, sales director, (left) and T. C. Alexander, chief test pilot.

Patch, special Flocos representative, made a test flight from Los Angeles to Colorado Springs in the Flocos demonstration plane and there put the engine through an extensive series of check and flight tests for J. Don Alexander, and engineers of the Kootenai company. The record test flight was made with a total flying time of 20 hr. and 10 min. over a 2,500-mi. route and through varied adverse weather conditions.

The Flocos corporation has installed more than \$150,000 worth of additional equipment, giving the plant a production of 100 engines per month by July 1, Mr. Odenbreit stated, in order that prompt delivery of these engines may be made to other aircraft manufacturers.

Captain Carranza Flies Non-Stop in Ryan Airplane from San Diego to Mexico City

IN A non-stop flight of 1,205 mi., Capt. Emilio Carranza flew from Camp Kearney, San Diego, Calif., to Valles de Arizón Field, Mexico City, May 24-25. The 20-yr. old Mexican pilot, who was hailed by his countrymen as a national hero following his spectacular 39-hr. 20-min. flight, he used a Ryan plane similar to the Spirit of St. Louis except for a slightly smaller gasoline capacity.

Captain Carranza flew his plane, the "Mexico Ensign," along the Gulf of California, passing over Guaymas. From Monterrey he flew to Oaxaca and then from the latter point to Mexico City. He carried a total of 365 gal. of fuel in the flight, with 146 gal. in the wing tanks and 123 gal. in the fuselage reservoirs.

Captain Carranza now plans to fly from Mexico City to

Washington, D. C., on a Mexican good will flight returning the courtesy of Colonel Lindbergh's Washington-Mexico trip on stop journey of last December.

DH Moths and DH Engines to be Produced In America by New Delaware Corporation

QUANTITY PRODUCTION in the United States of the De Havilland Moth has been announced by the Moth Aircraft Corp., which has been incorporated in Delaware with a capital of \$500,000. Rights to manufacture and sell the De Havilland Moth but also the four-cylinder and six-cylinder DH engines have been obtained by the company. The engine develops 132 hp.

The first American built Moth is to be completed early in August, according to plans. A number of engines will be imported from England in order to hasten production. The DH Moth airplane is holder of a number of records for both distance and speed.

Karl E. House is business manager of the new concern, J. Edwin Morrow is factory manager in charge of production, and Kenneth R. Unger is in charge of sales. House R. Work, 555 Fifth Ave., New York, is chairman of the board of directors of the company. Joseph Smith of New York City will serve as the bookkeeper. House, Morrow, and Unger will also act as directors.

Morrow a Passenger

During the World War, Morrow was vice president of the Willys-Morrow Co., which, it is said, built more than 7,000 UX-5 engines for the Government. He was also one of the pioneers who, with Glenn H. Curtiss, Alexander Graham Bell, and Louisman Biddings, made aeronautical experiments at Hammondsport, N. Y. Morrow was recently factory manager of the Atlantic Aircraft Corp. of Hammondsport, N. Y. Unger is a veteran test pilot and Royal Air Force test pilot who saw an action during the war.

Dirigible Italia Bearing General Nobile and Crew Reported Lost After Flight to Pole

AN WEEK ago in news, General Nobile and his crew are reported lost in the Arctic wastes following a flight over the North Pole. The dirigible Italia, scheduled to return to its base at Spitzbergen, is many days late, and only garbled radio messages specifying disaster have been received from the Italian expedition. Late reports indicate that the dirigible has drifted toward Siberia.

General Nobile made his trip to the Pole on May 23, following a flight to Leningrad. Messages from the Italia stated that the ship attained and circled the North Pole two times and then the next midnight landed south of the return flight. Reported on May 24 of steady flight north, however, were shortly followed by silence. Various plans of a rescue attempt are now being considered, the home ship, the Italia, already having started north. It is estimated that the Italia is capable of remaining aloft for a period of two weeks.

Seven Were in Norge Flight

Capt. Roald Amundsen, who was accompanied by General Nobile in the flight of the dirigible Norge over the North Pole in 1926, and Capt. George B. Wilkins and Ensign Carl B. Eklund, who recently flew to their Lockheed Vega plane from Ft. Barrow, Alaska, in Spitzbergen, are among the men planning rescue attempts. There are 19 men aboard the Italia, it is reported, seven of whom were in the Norge flight.

MAHONEY



Ed R. Brown and Col. Gen. A. J. Loughrey standing by

new Ryan biplane recently delivered to Col. Loughrey

on Land

or Water

THIS BROUGHAM is designed to dominate the Whittell cabin monoplane field. As a sea plane, equipped with Edo Pootoon, take-off with five people and 67 gallons of gasoline has been made in 18 seconds. As a land plane, with five people and 85 gallons of gasoline, it

has taken off in 6 seconds. Performance—where performance is most needed, maneuverability, stamina, unusual appointments, exceptional workmanship, and the application of sound, basic engineering maintain the Mahoney Brougham in a class by itself—at a price that will interest you!

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THE MAHONEY AIRCRAFT CORP.

Division of Ryan Co. Ltd.

San Diego

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and Ryan Flying Company

TELEPHONE 707 for advertising attention

Special Aerial Camera for High Altitude

Work is Built by the Fairchild Company
THE WORLD'S largest aerial camera, specially designed and built for service at high altitudes has just been completed at New York City, by the Fairchild Aerial Camera Corp., in cooperation with the Aerial Photographs Research Division of the Army Air Corps at Wright Field, Dayton, O. It will soon undergo its first trial test at a Long Island field.

According to Sherman Fairchild, president of the Fairchild Company, the new camera has been designed to operate 30,000 ft. or more. It is said that this new automatic

shutter is specified interval is decided by the photographer. Special filters are provided for protection of film plates or lenses.

The new aerial camera will make an exposure 8" x 10" in size, the largest ever developed. Hitherto the use of exposures made by the largest aerial camera has only been 7" x 9". As to its range and adaptability, Fairchild estimated that a plane equipped with this new camera and flying for example at a height of 30,000 ft., will be enabled to photograph a single exposure an area over four square miles in extent in large detail. The exposure of this camera will allow enough film for 200 separate exposures without reloading.

Upon completion of the tests at New York, the camera will be sent to Dayton, O., where it will be installed in an Army plane for extensive experimental photographic work.

St. Tammany Company is Lowest Bidder For New Orleans-Border Mail Transport

THE ST. Tammany Gulf Coast Airways, Inc., of New Orleans, La., was the lowest bidder on the proposed air mail route from New Orleans, via Houston, Tex., to San Antonio, Brownsville, or Laredo on the Mexican border, bids for which were recently opened at the Post Office Department. The firm agrees to carry this route for \$1 per mile.

Other bidders on this route were: Western Air Express, Los Angeles, \$1.05 per lb.; Texas Aero Corp., Tangle, Tex., \$2.25 per lb.; Raymond Nelson, Houston, Tex., \$3.00 per lb.; Walter T. Varney, Wilmington, Del., \$1.31 per lb.; and Fox Air Lines, Pittsburgh, \$2.00.

Bids were also opened on the three foreign routes now in award, the contracts on which expire July 1, 1935. The following bids were received on the route from Seattle, Wash., to Victoria, B. C.: Boeing Air Transport, Seattle, \$14.50 per round trip; Northwest Air Service, Inc., Seattle, \$10 per round trip; P. F. Norcross, and Doris C. Goss, Seattle, \$14.75 per round trip.

Key West to Havana: H. K. White, Jacksonville, Fla., \$1.00 per lb.; Pan-American Airways, Inc., New York City, \$1.05 per mile.

New Orleans to Port-au-Prince, La.: Arthur R. Gaudin, New Orleans, \$25.00 per round trip; Southern Airways, Inc., New Orleans, \$30.00 per round trip.

Two World Seaplane Load Carrying Marks Are Shattered by Navy Pilots Flying PN-12

TWO MORE world seaplane records have been broken with the Navy PN-12 plane in which Lieutenant Goss and Snook recently set a new mark of 36 hr. 1 min. 24 sec. in flight duration. *Leontine Snowhawk* with *Leontine* and *Leontine* as its pilot and observer, respectively, formed the crew of the plane in these new record flights.

With a load of 5,000 lb. dead weight, the plane broke the former full pay load duration record for seaplanes when it remained in the air 17 hr. 55 min. 13.6 sec., May 25 at Philadelphia. The former mark was set 1 hr. 7 min. 28 sec. and was set by the PS-50 in 1927 by *Leontine* and *Leontine* of the Navy.

The second mark to be surpassed was for distance covered with maximum load. The PS-42, in its flight, covered 5,112.79 mi., it was estimated, that breaking the record of 494 mi. set by Richard Wagner and George Thompson in a Dornier plane on Aug. 8, 1927 at Alhambra, Switzerland.

Better marks might have been set, it is said, had it not been for the fog, winds, and rain which were encountered. Meeting the conditions, the PS-42 was brought down, though 300 gal. of fuel were still left in her tanks—amounting to more covered an additional 500 mi.

A BOOKLET -- free !



Fascinating and
Instructive

A Real Eye-opener!

To
EXECUTIVES OF THE AIRCRAFT INDUSTRY

HERE'S A compact little booklet containing important charts, statistics, data and information every present and prospective manufacturer of airplanes, motors and accessories should possess. This booklet shows . . . how large investments in expensive plant locations and buildings can be eliminated . . . how aircraft production costs can be reduced . . . how plant and labor efficiency can be improved . . . how peak production schedules, tests and all other activities can be conducted throughout the entire year without interruption from snow, frost, serious fog, rain, freezing temperature, extreme heat or electric storms . . . what the U. S. Govt. found in a nation-wide investigation covering rates for an aviation training school . . . Etc. etc.

Included in this booklet is a brief description of Lindbergh Field—San Diego's \$650,000.00 new municipal airport, now under construction. When completed, this Triple A airport will be one of the finest in the world, and space on this field is being provided for airplane factories at unusually attractive rates. *Inquiries Solicited.*

For the booklet and other information write to the Industrial Development Department, 796 Chamber of Commerce Bldg., San Diego, Calif.

San Diego
California
Air Capital of the West

DON'T FORGET
AUGUST 16-17

Rehearsal of Lindbergh Field—with the music of the orchestra in the morning. *Quentin* from 10:30 to 11:30 a.m. *Quentin* from 11:30 to 12:30 p.m. *Quentin* from 12:30 to 1:30 p.m. *Quentin* from 1:30 to 2:30 p.m. *Quentin* from 2:30 to 3:30 p.m. *Quentin* from 3:30 to 4:30 p.m. *Quentin* from 4:30 to 5:30 p.m. *Quentin* from 5:30 to 6:30 p.m. *Quentin* from 6:30 to 7:30 p.m. *Quentin* from 7:30 to 8:30 p.m. *Quentin* from 8:30 to 9:30 p.m. *Quentin* from 9:30 to 10:30 p.m. *Quentin* from 10:30 to 11:30 p.m. *Quentin* from 11:30 to 12:30 a.m. *Quentin* from 12:30 to 1:30 a.m. *Quentin* from 1:30 to 2:30 a.m. *Quentin* from 2:30 to 3:30 a.m. *Quentin* from 3:30 to 4:30 a.m. *Quentin* from 4:30 to 5:30 a.m. *Quentin* from 5:30 to 6:30 a.m. *Quentin* from 6:30 to 7:30 a.m. *Quentin* from 7:30 to 8:30 a.m. *Quentin* from 8:30 to 9:30 a.m. *Quentin* from 9:30 to 10:30 a.m. *Quentin* from 10:30 to 11:30 a.m. *Quentin* from 11:30 to 12:30 a.m. *Quentin* from 12:30 to 1:30 a.m. *Quentin* from 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For The Discriminating Purchaser:

THE AIRSEDAN

AIRLINE OPERATORS will find this plane meets with all their requirements. The cabin has exceptionally comfortable seats for four large passengers and the pilot's visibility is unexcelled.

PRIVATE OWNERS will approve of the fine appointments which are selected to satisfy the most critical taste.

CORPORATIONS desiring to keep step with the progress of the times will find that here is an efficient and up-to-date vehicle for transporting executives and personnel to widely separated branches.

We will be glad to assist you in determining the adaptability of this fine product to your requirements.

BUHL AIRCRAFT COMPANY
Marysville Michigan

Lieutenant Champion Preparing His Wright "Apache" for New Airspeed Record Attempt

LIEUT. C. C. CHAMPION, Jr., U.S.N., holder of the world's airspeed record, is busy with preparation for another airspeed flight on his Wasp-engined Wright "Apache," as AIRSEDA goes to press.

Determined with the present record which is 35,425 ft., and believing that he can surpass this height by from 10 to 15 thousand feet, Lieutenant Champion is working overtime with his post graduate studies at Annapolis, Md., in order to be free to work much in Washington to make the altitude tests.

The little "Apache," which last year reached what Low levelist Champion then still believed to have been an unobtainable altitude of 47,800 ft., has been thoroughly reconditioned after its spectacular descent during which it set a five hour different record. A new Pratt & Whitney Wasp has been installed, the wings of the plane have been recovered, the supercharger has been thoroughly tested and permanent recording high altitude instruments have been added.

The little plane is at the Naval Air Station, Annapolis, the scene of its former high altitude triumph both as a land plane and a seaplane. At the time of the spectacular flight last July, the celebrated airspeed figure did not mean as it stands record in view of the fact that Jane Calhoun stood as the holder in the record holder with a mark of better than 46,000 ft. Subsequently this was washed off the record—in record.

Champion, with his "American record," automatically stepped into the shoes of "Champion of the world." Several months ago as reporting Editor picked up the 26,418 mark in a question of feet, but not as much as 100 meters which the regulations require before a new record will be granted. Knowing the capabilities of the Wasp engine and the little single seater Apache, as well as his own ability to withstand high altitude work, Lieutenant Champion is quite anxious for a new attempt.

Numerous unexpected delays may be encountered resulting in prolonging the tests and thus again the flight may be repeated immediately, it is said.

Coffman-Strong Aircraft Co., Clinton, Okla., Constructs First Experimental Monoplane

COFFMAN-STRONG AIRCRAFT Co., Clinton, Okla., has completed its first experimental model and is presently in the process of quantity production. It is a three place monoplane designed to run any power plant up to 120 hp. though the first model was tested with a 50 hp. Cessna 0-175. This plane was used at the Oklahoma State Air Show and is said to have excited much interest at every airport visited. One of the novel features in its design is that the forward stick is suspended from the ceiling gliding down and into the elevator mounted on the high wing. The plane has a span of 27 ft. and chord of 8 ft. 8 in., giving an area of 247 sq. ft. The airtail used is a modified Clark Y. The length is 22 ft. 8 in. and height 7 ft. 5 in. It weighs 1340 lb. empty and has a gross weight of 1720 lb. Assembly is fifteen minutes, the high speed is 120 m.p.h. and landing speed 20 m.p.h.

H. H. Coffman, president of the company, is the designer of the plane. For a number of years he has been doing aircraft flying and commercial work. He has been working on this design for some time and is now at factories are built in Clinton. It is planned that a production of one plane a day will be maintained. The company is incorporated with \$25,000 capital stock. H. R. Gidycz is vice president and Doris R. Fure is secretary and treasurer.

Fleet of Airplanes Will Leave Des Moines June 18 for State of Iowa Good Will Tour

MORE THAN 20 airplanes are expected to participate in the Iowa Good Will Tour which is to leave the Des Moines Municipal Airport June 18 to visit 10 of the largest towns in the state. A first prize of \$1,000 has been posted for the winner of the five day tour. Second and third prizes are \$500 and \$250, respectively.

Only Iowa fliers, operating from airports within the state, can participate for the prize money. However, many non-Iowa fliers have been invited to join with their demonstration planes. The race is to be conducted along the same lines as the Ford Roundtrip Tour. It is being planned under the auspices of the Iowa chapters of the National Aeronautic Association. George Yates, the flying photographer, and Jack Wilson, former Army flier, are in charge of all plans for the tour. No entry fee is required. Entries should be mailed to: Iowa Good Will Air Tour, 1034 Grand Avenue, Des Moines.

The tour will leave from Des Moines Municipal Airport Monday morning, June 18. The proposed itinerary is as follows:

June 18, Leave Des Moines, reach Gustavus, overnight; June 19, reach Cedar Rapids, overnight; Wednesday, June 20, reach Mason City, overnight; Friday, June 21, reach Keosauqua, overnight; Saturday, June 22, reach Okmoo, reach, return to Des Moines.

An convention has been selected the Standard Oil Co. to use its Ford plane to accompany the tour. The *Sydney-Tribune*, The *Des Moines* newspaper, will send its own Ford biplane "Good News," and Henry Bode, newspaper flier. These convention men will include the Ryan biplane "220."

Lead" in the list of entries. The White Aircraft, manufacturer of the "Whisper Sport," are planning to enter one or two of its new production planes, and the Christensen Aero-mechanical Service has promised to enter an Arrow biplane, of which it is distributor.

To Make Iowa Air-minded

The purpose of the tour is mainly to acquaint a greater number of Iowa people with the modern types of aircraft now in use and to create a more air-minded atmosphere throughout the general Iowa public so that the state will share and nobly respond to all aviation projects presented.

Nearly all of the towns to be visited have improved airports. Several prominent men will be taken along to address aviation dinners and banquets arranged in honor of the visiting aircraft. The reported success and benefits derived from a similar tour held in the state of Kansas has prompted the aviation enthusiasts of Iowa to promote the tour to its fullest extent.

Limbergh Beacon's 8,000,000 Candlepower Beam Now Flashing on Los Angeles Tower

FEBRUARY THE most significant feature of the dedication of the new Los Angeles City Hall recently was the flashing of the new Limbergh Beacon which has been placed at the top of the 452 ft. tower.

This light has a 900 watt filament lamp burning below a 24 in. mirror, the rays being concentrated by a 24 in. lens into an 8,000,000 candlepower beam that is visible for 60 mi. in fair weather. The light revolves six times a minute.

AS.M.E. Will Hold Special Aero Meeting In Conjunction With Detroit Air-Olympics

A SPECIAL national meeting of the aeronautics division, American Society of Mechanical Engineers, will be held in Detroit June 26, 26, and 28 in conjunction with the Detroit Air-Olympics to be held in that city on June 26, according to an announcement by Earl Eise, assistant manager of the aero club events for the Detroit Detroit Air-Olympics.

The meeting will embrace six technical sessions, addressed by several of the foremost aeronautical and mechanical engineering authorities in the world, and is expected to be attended by hundreds of the 2,500 members in the society's aeronautical division.

Opening remarks will be made by F. H. Low, chairman of the society's Detroit section. Subsequent speakers, according to the program, will include William D. Bower, general manager of the surplus division, Ford Motor Co.; William F. MacCormack, Jr., assistant secretary of the Department of Commerce, in charge of aeronautics; Harold Gossens of Fairchild Camera Engineering Corp., Farmingdale, L. I.; F. Handley-Page of London, Eng.; F. K. Kirtley, professor of aeronautical engineering, University of Washington, Seattle; Dr. S. A. Essel, propeller manufacturer, New York; Alex Dow, president of the Detroit Edison Co., and president of A.S.M.E.; James G. Ray, operations manager, Princeton Aviation, Inc., Philadelphia; Charles B. Morris, chief engineer, The Haskelite Co., Great Rapids, Mich.; O. J. Wells, Jr., of Philadelphia Transportation Co., New York; J. F. Trease of Perkin-Elmer Laboratories, Madison, Wis.; Lucet Carl Over, material division, Army Air Corps, Dayton, O.; Max Short of Brewster Aircraft Co., Wabash, Ind.; Dr. Carl G. Rowdy, chairman, David Goodrich Committee on Aeronautical Engineering; Gen. W. E. Gillmore, command-

ing officer of Wright Field, Dayton, O.; Carl B. Frick, general manager, Aircraft Development Corp., Detroit; and Col. V. E. Clark, Buffalo, N. Y. It is expected that Capt. George Robert Warren, Arctic explorer, also will address one of the sessions.

Stash will talk on "Aviation as a Transport," MacCormack on "Aeronautical Activities of the Department of Commerce," Handley-Page on "The Automobile Shift," Ray on "The Importance of an Action for Commercial Operations," and General Gossens on "Military Aviation." The other speakers are here shown appropriate subjects.

The Booth-Cadillac Hotel will be the headquarters of the engineers while in Detroit.

Browning Aircrafts Organized in Indiana To Turn Out Light Sockety Engineed Plane

THE BROWNING Aircrafts have been organized in Gary, Ind., for the purpose of designing and manufacturing a light single plane biplane, to be powered with a 40 hp. Sockety engine. It is designed to have a high speed, according to its manufacturers, of about 100 m.p.h. with a cruising radius of close to 1000 mi. It will be an open cockpit type with welded steel tube fuselage and standard wing, later date, according to W. Browning White, president of the new company, work will be started on a two place nine, mid-engine wing biplane, slightly larger in size but powered with the same engine as the open model. This plane will be constructed of welded steel tubing throughout. Charles Hayward is vice president of the Browning Aircrafts, with Robert Sherry as secretary and treasurer, and J. J. Goodrich in charge of construction.

Wright Cyclone Engines to be Offered For Commercial Installation This Fall

WRIGHT CYCLONE engines will be ready for commercial installation this fall, according to a recent announcement by Charles L. Lawrence, president of the Wright Aeronautical Corp., Fairport, N. Y. To date, the Navy Department has awarded the active production of this 600 hp. engine.

The Cyclone, a large air cooled, radial type power plant of six cylinders, is the engine used in the PS-12 Navy airplane which recently established a new world speed record of 26 hr. 1 min. 24 sec. at Philadelphia.



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entire body. Like the wings, the fuselage is slip-covered with Flightin, and finished with five coats of clear dope and two coats of dark blue lacquer. Steel work in the fuselage interior is covered with acidic primer and lacquer.

Control surfaces are all of steel construction, and fabric-covered. Elevators are of one piece. The fin is adjustable on the ground, and the stabilizer is adjustable in the air by means of a lever near the pilot, the lever having a wide range of adjustment. The tail surface ribs of the Aero Coupe are of lightened sheet steel, the surfaces being started by means of hinges and the strap variety, making for increased aerodynamic efficiency and sturdiness.

Split Type Stabilizer Used

Another feature regarded by many as making for aerodynamic efficiency is a split type stabilizer, that member being offset to either side of the fuselage. The pilot's stabilizer is biased by two stainless steel strips, with adjustment knobs. Two brass rods have the rods, the rods are balanced. All tail surfaces are constructed in duplicate, and are of pleasing contour to shape.

In the landing gear split type axle ends, handle, bent-end steel tubes are used. The axles are finished in chrome nickel-plated, and streamlined. The lower axle are equipped with stainless steel bush, stainless steel wheels. Shock absorber bearings. On the Aero Coupe the lock nut is inside the wheel hub, and the hub is fixed with an stainless steel. Wheels are of one piece, round, and well ahead of the center of gravity. Chrome stainless steel, of bent-end, streamlined steel tubing, and steel shock struts complete the construction of the undercarriage. The axle and radius struts are hinged on the bottom of the fuselage near the fin, while the shock struts are attached to the intermediate members. Radius extension linkers and 25 x 4 links are part of the equipment on the wheels, the links being controlled through cables and foot pedals in the pilot's cockpit.

Undercarriage fittings on all forthcoming models will make installation of passenger models. The wheel's tail end is constructed of round chrome nickel-plated, riveted, but not removable from the cockpit. Conventional steel fittings, with a shoe, and Ohio shock absorbers complete the assembly. The complete unit, accessible in the upper portion through a stainless door in the side of the fuselage, can be taken out by removing three pins. The ground angle is 14 deg.

The Aero Coupe is powered with a seven cylinder, radial, air cooled, 110 hp. Warner engine, the engine being mounted in rear type steel tubing, welded, and the engine mount is easily detachable in the air. The engine cooling is of the automobile hood type, and quickly detachable by means of snap fasteners. Ventilation in the aluminum covering is by means of hinged louvers adjusted to the air flow.

Two main 20 gal. gasoline tanks, located in the center section, feed the engine by gravity. The tanks are made of mild steel, and are connected to steel tube radiators. Right gauges drop below each tank. Filters are easily located. The radiators are built on the outside front of each tank. All fuel and oil lines are copper, with streamlined three way valves and streamer tubes. The oil tank, for gallons in capacity, also is made of welded aluminum. An aluminum fire wall and a Ryan-Tyler engine shield, the line located to the right of the pilot in his cockpit is provided as safety precautions.

The present model is equipped with a Hartwell propeller, 7 ft. 6 in. in diameter, although the pitch best suited to the plane has not yet been decided. The engine has no starter, although provision has been made for one. Controls for the engine are of the pushrod variety.

Wiring on the plane provides for interior and running lights, for radio communication, and an electrical starter. The exhaust opens to the rear of the fuselage.

The Aero Coupe will seat two passengers, side by side, over

the center of gravity, the pilot being located behind and above the passenger's cockpit. The cockpits are adequately roomy, but for the passenger being 30 in. wide inside and 40 in. high. Spacemen in the pilot's cockpit is practically the same. Upholstery in good quality synthetic leather, easy to clean, forming a pleasing contrast with the dark blue canvas of the fuselage. The walls of both cockpits are lined and the aluminum basket seat-backs are upholstered with leather. Deep cushions, quickly detachable for the substitution of padding and safety belts, complete the interior furnishings. The beds are of web, and are quickly made.

Accessibility to the pilot's cockpit is facilitated by means of conveniently located steps and ladders. For the front cockpit wide walks on the lower wing panels in conjunction with a large door on the left hand side of the plane make for easy access or egress. Visibility is excellent from both cockpits, due to a combination of features, among the most of which are the adjustable seats, the tapering small round fuselage, stepless, and the low position of the upper wing.



The Aero-Craft "Aero Coupe" powered with a 110 hp. Warner "Warner" engine on exhibition at the All-American Aircraft Show at Dayton.

which is almost on a level with the pilot's eyes. The pilot's windshield is of triplex, three pieces, and large enough to shelter the cockpit as well as provide unobstructed views. Windows in the passenger's cockpit are of triplex, and a heater is provided in the cockpit's floor, making use of heat from the exhaust gases.

An Elgin wrist control instrument board is provided for the pilot, while in the front cockpit a few instruments are grouped in the center of a board, hinged at the top, is provided in the baggage compartment forward of that cockpit. All fittings and trimmings in the cockpit are chrome plated. The floor is of plywood and carpeted. A second baggage compartment, large enough to accommodate two good sized suit cases is provided behind the pilot's cockpit and accessible from outside the plane.

Dead Stick Type of Control

Controls are of the conventional dead stick type, having forward tube slides, with rubber grips. Dead stick are controlled by means of dead line push rods. The stick in the front cockpit is easily removable and spring clips are provided for holding it. The rudder is controlled by adjustable foot pedals of underduty type, single cables being attached. The control surfaces of ailerons are provided in the wings at sliding control hinge points.

It has been stated by the manufacturer that the design of the Aero Coupe has been worked out in accordance with the Department of Commerce specifications. The general data and dimensions submitted are as follows:

Length overall 35 ft.
Wing span 35 ft.
Height upper wing 32 ft.



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The Galt Joint Union High School has assumed national and world-wide interest during the last two years as the first High School known to actually combine physical and aeronautical work as a public free year High School. During the past year, gifts from the Government and other sources in aeronautical equipment have exceeded the sum of \$10,000.00, including the latest and most modern planes. Owing to the demand and the large amount of

GALT, CALIFORNIA ANNOUNCES

equipment on hand, the Board of Education has established a Junior College course in addition to the High School work, the college work being accredited by the University of California.

The Galt Joint Union High School and Junior College is located in the famous Sacramento Valley, only four-and-a-half miles from the famous Government Weather Field. The school has its own flying field, adjoining the buildings and is one of the model fields of the valley, having graded runways in all directions and capable of handling any amount of traffic.

Admission

Students are expected to make formal application for admission to the High School and Junior College upon blanks supplied for the purpose. Information is sought by this means not only concerning the scholarship of the students but also concerning their character, attitude, and probable ability to appreciate and cooperate with the ideals and standards of the College Department. A limited number of those who meet these questions will be accepted.

Students from other approved high schools or colleges are admitted without examination upon presentation of properly authenticated certificates showing in detail the requisite completed course.

Blacks will be furnished by the Secretary of the High School and Junior College, on which the record of the work done will be contained.

Admission Units

For admission to the Junior College Department, High School graduation with a total of fifteen (15) credit earned units is required. The definition of the word "unit" as accepted by the University of California is in admission of students into that particular institution.

For further information address the Aeronautical Department, Galt Joint Union High School and Junior College, Galt, California.

Span, lower wing	28 ft.
Wing area	230 sq. ft.
Landing gear track	6 ft.
Power plant	Warner Scarab 130 hp at 1600 rpm
Weight empty	1100 lb.
Pay load	550 lb.
Useful load	1600 lb.
Gross weight	2350 lb.
High speed	115 m.p.h.
Cruising speed	100 m.p.h.
Climb	900 f.p.m.
Service ceiling	12,000 ft.
Cruising radius	600 mi.

The Warner "Scarab"

Continued from page 1636

exposed, as are the rocker arms, as far back as the fulcrum point. Behind this, the valve mechanism is housed in an aluminum alloy box, the aluminum cover of which may be easily removed to make tappet adjustments. The valve gear mechanism is then protected from dirt, while the springs are exposed for cooling purposes. The sides of the box also act as supports for the rocker arms and are bolted to the cylinder head with two 5/16 in. bolts. The rocker arm operates on a bronze bearing lubricated by a Zerk Aromatic fitting. The cylinder head is dovetail and bolted to the barrel. Eight bolts are used to attach the head to the barrel and eight bolts are used to hold the cylinders to the crankcase. The skirt of the cylinder barrel projects about 1/2 in. into the crankcase to prevent surplus oil from running into the cylinders.

Permanent mold pieces of Sphéronite are used. They are of flat head design with two American Blower compression rings and one Perfect Circle oil scraper ring. They

weigh only one pound five ounces each. The piston pin is flat finished and bears directly on the piston web, bronze bearings in connecting rods. Each master rod and link rod are of 1 section. The master rod is of one piece design with a ball joint bearing for the crank pin. Through hole inside the wrist pin which takes the bearings, directly to the master rod big end. The construction is said to stand



Showing the construction of the Warner "Scarab" is a Pease

motor "Columbus" side plugging the pin. There are separate oil leads from the crank pin to each link and bearing.

The crankshaft is a single piece machined on all surfaces. It is very short, making for greater stiffness. There are two main bearings and one thrust bearing. The propeller hub flange is spliced on to the crankshaft and is part of the engine. In the rear is the crankshaft and is part of the crankshaft by an oil pump coupling.

The two cam rings in the rear are each one piece forgings.



to a hook again making outfitting and dismounting more comfortable.

Edo sought that Ryan made many very early, and this is an important feature in seaplane operation. Good accommodations as secured by large displacement of the float, great reserve buoyancy of 125%. High location of the wing allows the seaplane to be brought forward to approach landings with the float deck at the stern and at the bow allows the ship to be brought close

to the float when necessary and retract on land water, thus allowing the seaplane to be secured as open and maintaining at the trouble of frequent launching which would hinder operation.



EDO AIRCRAFT CORPORATION
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June 1, 1932

with the gear on the inside, an integral part. The cam rings and the oil ring are speed and each has four lobes. In contact with the rings are the roller followers working on journal cut metal aluminum valve guides and operating distance push rods with ground ball ends. The push rods are relieved on aluminum tubes and are fitted with a roller support at the upper end.

The crankcase is made up of two heavily ribbed halves joined on the water line of the cylinders. This construction is said to facilitate the assembling of the connecting rod and crankshaft in a short, deferring production cost. It admits a greater water surface and sound castings and characterizes a number of forward problems. It is made of aluminum alloy. The intake manifold induction system is carried by a separate casting bolted to the rear of the crankcase. It carries out of the intake manifold ring with the manifold pipes mounted in it and bolted to the sides of the cylinders. The manifold ring is integral with the casting. It is similar with a diameter of 12 in. having eight mounting studs.

Mounted below and to the rear of the cylinder is the Scarab NAB 8A carburetor with the intake heated by the



A Scarab "Junior" fitted with a 130 hp. Warner "Scarab" engine.

exhaust gases of the low lower cylinders. Between the carburetor and the intake manifold ring is the oil pump, connected to the scavenger oil pump which feeds to the oil tank, from where the oil is forced by the pressure pump to all of the pin bearings and by splash to the cylinders. The engine is equipped with two Bendix magnets, each mounted at 30 deg. from the center line so as to make them more invariable and to allow for the mounting of a starter between them. The magnets are driven through lead pins, on EBC ball bearings, from the center shaft coupled to the crankshaft.

The several specifications on the Warner Scarab engine are as follows:

Type	.....
Number of cylinders	.....
Stroke of cylinders	.....
Propeller drive	.....
Rated power	..... 130 hp
Rated speed	..... 1600 rpm
Maximum power	..... 150 hp
Maximum speed	..... 1800 rpm
Weight dry, without hub or starter	..... 275 lb.
Specific weight	..... 2.05 lb. per hp.
Guaranteed fuel consumption at rated power	..... 65 lb./hp./hr.
Guaranteed oil consumption at rated power	..... 5.2 lb./hp./hr.
Max. cooling pressure	..... 132 lb.
Bore	..... 4 1/2 in.
Stroke	..... 4 1/2 in.
Displacement	..... 422 cu. in.
Overall diameter	..... 20 1/2 in.
Overall length, without starter	..... 37 1/2 in.
Diameter of mounting ring 17 in.
Intake manifold dual Bendix
Carburetor Stromberg NAB 8A

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once a week at their headquarters by each of the divisions. In the case of aviation divisions, departmental officials in plain, drab are in reality nothing more than pencils of the house for study. Then the files go on with their listing a navigation, engine, mechanic and other subjects pertaining to aviation and the division in the Navy.

Headquarters of the reserve aviation squadrons are located for the most part at naval air stations or at the civil reserve bases. Two of these squadrons have their headquarters at Annapolis, two at Rockaway Beach, one at Great Lakes and another at Naval Park. Other squadrons and units have headquarters at the naval aircraft factory at Philadelphia and the naval air stations at Pensacola, Hampton Roads, San Diego and Ansonia. Headquarters for the reserves



An "NT" plane warming up at the Naval Reserve Aviation Base at Great Lakes.

are at Detroit, Minneapolis, St. Louis, Los Angeles and the Philippines.

In addition to the drill periods, the reserves are allowed to spend 15 days a year on active duty at one of the reserve aviation units or at a regular naval air station as a means of further maintaining efficiency. These, they are trained in flying the latest and fastest type of service planes. In the majority of cases it has been found that these officers are not satisfied with but 15 days' active duty. Most of them request longer training periods. It is a common occurrence also that a dozen of them at the various reserve bases each week throughout the year, "just getting in a little flying time."

"So far we have made only a beginning in the training of squadrons as such," another officer stationed at the Bureau of Navigation conceded. "However, our training of reserves is working out exceptionally well. We are now working to effect to distribute flight squadrons to our various squadrons so that they will have a home place and planes of the proper type to fly. There is every indication that we shall accomplish this in part during the coming summer."

While the work of training the squadrons with equipment progresses, Navy Department officials have not been asleep. They realize that to obtain the greatest amount of good from the equipment supplied, the reserve aviators must be indoctrinated in present-day aircraft maneuvers and tactics. They must learn also the relation aviation bears to the Navy under the present discipline.

With this in view, 50 of the reserve aviation, commissioned since 1925, are now performing a year's training duty with the fleet. This training began July 1 last year. Twenty-two of these officers are assigned to observation squadrons, 11 to the fleet and five to fighting squadrons. These figures are the showing of official Navy records. When the year is completed these men are expected to be well qualified for the training in squadrons which is to follow. It is explained that this system is all possibility will be continued indefinitely. Reports received by the Bureau of Aeronautics from the various stations, ships and squadrons in which the reserves are

June 4, 1935

under show that so far the arrangement is a success.

The present naval reserve is an outgrowth of the other "naval reserve force." It was created under the provisions of an act of Congress approved Feb. 28, 1925, which became effective July 1 of that year. There are three classes provided in the present naval reserve. The letter "B" after the name is used to designate a member of the First Naval Reserve. Merchant marine naval reserves are designated by the letter "M," while a "V" appears in the official records after the name of those belonging to the Volunteer reserve.

Each of the three divisions, a number of classifications are provided. The letters "D-B" designate an officer of the deck force, who is a member of the First Naval Reserve. The letters "D-M" are used to designate an officer in the fleet reserve assigned to engineering duties. In each classification, the first letter denotes the type of duty which the officer is qualified to perform, while the second letter tells whether he is a member of the fleet, merchant marine or volunteer reserve. Graduates of the reserve aviation course receive the designation "A-F," indicating that they are aviation officers of the fleet reserve.

Deck officers, engineering officers, officers qualified for both deck and engineering duties and aviation officers are considered officers of the line and wear the same uniforms as those provided for officers of the corresponding rank in the line of the regular Navy. Officers of the reserve wear the same uniforms as the sailors with the insignia of their branches



A view of the U. S. Naval Training Station at Great Lakes, Ill. 1. The hangar field. 2. The parade ground of the training station. 3. The airplane bank and the harbor.

of the reserve. Upon completion of the aviation course and appointment as aviator (A-F) U.S.N.R., each man is paid a gratuity of \$100 for the purchase of the required uniform. Members of the naval reserve are to wear the uniforms of their rank and ratings when at drill, the naval reserve regulations specify. The weekly drills or periods of equivalent day required of aviation officers are required of all members of the fleet reserve. To obtain credit for these drills, the officers and men must appear in uniform. Sixty is the maximum number of drills that may be performed for pay purposes. For the performance of this number, the officers and men are given one day's base pay for each drill.

The yearly to day active duty period, which aviation officers perform, likewise is performed by members of the fleet reserve of the fleet reserve. The duty is of course of a different nature. For this service, the officers and men receive the same pay and allowances as are received by those in the regular Navy of the same rank, grade or rating and length of service. Officers and men "detailed for training

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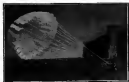
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or other duty in aviation which involves actual flying in aircraft, in accordance with orders issued by the Bureau of Aeronautics, are entitled to draw 50 per cent. of their base pay in addition. This is known as the "flight pay".

Four or more years of service in any grade is required of a First Naval Reserve officer before promotion to the next highest rank. In these four years, the officer must have spent at least 50 days on active duty. Professional examinations are given to determine his fitness for holding the next rank. In addition to these requirements, an aviation officer must have had 125 hr. in the air as an aviator before he can be promoted to junior grade lieutenant, 250 hr. in the air in this rank before he is eligible for promotion to lieutenant and 350 hr. in the rank of lieutenant before he can be made a lieutenant commander. He must also satisfactorily pass a flight test.

Student reserve aviators are related in the volunteer reserve when they have partially completed the ground training and it has been ascertained that they will in all respects



Instructions on Wright Whirlwind engine being given at the Eastern Beach, L. I., Naval Reserve Aviation base. Left John Brown, commanding officer, is seated from the left

qualify for flight training. Members of the volunteer reserve are not required by law to perform any training. They may perform drills if they choose, but they receive no compensation. They may be promoted on their own application to perform the same training duty given members of the first reserve. For this duty they receive the same pay and other allowances given first reservists.

"All student aviators must be related as second class aviators and receive a rating which they receive after examination as aviators," instructions issued by the Navy Department provide. "They should be related in class V-2. When students are ordered to primary flight training, they should be transferred from class V-2 to class V-5. They must be given with the necessary uniforms before they are ordered to a unit for flight training. Transport on they will on the navy's airplanes and must have two tickets, the one issued must not authorize the issue of complete outfit, but only such items as are deemed necessary."

Class V-5, in which the student aviators are transferred before beginning their primary training, is for student aviators selected on a seasonal basis only. In joining the reserve, the prospective student aviator admits for a period of four years. The transfer to class V-5 does not affect his enlistment. However, the regulations stipulate that "student aviators of class V-5 will be eligible for promotion in the naval reserve after the successful completion of their course of training."

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SIDE SLIPS

By ROBERT B. OSBORN

As the news may not have reached some of the readers of *Aviation* who have been working hard and worrying about all these years in the hope that some day "this airplane business" might be saved and actually amount to something, we hasten to spread the good word. We too, had almost given up, after ten years of floundering and stalling and bawling and barely getting on starvation wages—we were just going to slack back to the old home town and seek for the old job as the ferry boat, when the good tidings reached us. Boys, we're saved! Our rescue is the Princeton graduating class have decided to take up aviation as a life work.

When this news reached the public through the newspapers, Carlin and Wright started to send me high marks on the New York Economy. H.E.P., Jr., a graduate of Harvard, who drifted into the office a while ago, claims that this activity in the market is only because of the announcement of Colonel Lindbergh's connection with Transcontinental Air Transport.

The people who are most puzzled and amazed by the prices mentioned and willing to pay for astronomical stock are the old-timers in the business. The glumest ones—those who sold their holdings in the future and then and now who sold short on the headlines and headlines—after, claim that this is the first time in commercial history that an attitude toward and a decision toward have been set at the same time.

A rising car was recently tied out, on a German motorcycle, using for propulsion a number of rockets mounted on the chains of the car, the rockets being ignited in rapid order by the driver. At a speed of 150 m.p.h., was obtained and the experiment appeared to be successful in every way, the aviator is now planning to put the same power device in an airplane. His practice that with such a machine flights from Berlin to New York will be made in two and a half hours, this accomplishment to be realized in ten years or so. If we were running the rocket drive on the first attempt to make this flight, and we are willing to bet anybody at any odds that we won't be, it would be just our luck to get in mid-air and have our faithful cigarette-lighter fail to light for the first time in history, preventing us from banking off the rockets necessary for the rest of the trip. This girl, cigarette-lighter has been working so faithfully that far, we are not afraid to leave it and in words of five or six, and we are suspecting it of holding us into a sense of security so that it can fail to light at a really moment time.

Mr. P.R.A., assistant colonel of the New York World, has suggested that the program based in Colonel Lindbergh by Alexander Herrick on the night the famous New York-Toronto flight was completed, should be placed in the Smithsonian Institution. The suggestion is a good one, if there could be some assurance that the old-fashioned right ship would not be more prominently exhibited and displayed with the placard, "This right ship is in the system of young men, capable of making fine double on the part of Colonel Lindbergh after his New York to Paris flight, which could have been made in the Langley Aerodrome."



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FOREIGN NEWS

By Special Arrangement with the Transcontinental Division Bureau of Foreign and Domestic Commerce

Sets Load Record in DH "Hound"

Flying a DH "Hound", Hubert Hood recently established a new record in England when he maintained an average speed of 150.541 m.p.h. with a load of 1,000 lb. (2,200 lb.) of lead. He flew from Stages Lane Airfield, Hagen, in a southerly and back, a distance of more than 60 mi. in 39



The DH "Hound" at the Stages Lane Airfield shortly before the record flight.

mi. 10 sec. The Hound plane is powered with a 500 hp. Napier Series XI engine.

Broad's record breaks the mark set by M. Larnes of France, who in 1932 flew a Hispano-Bellanca 420-1 powered with 500 hp. Hispano-Bellanca engine over a specified course and with the required load at an average speed of 153.009 m.p.h.

Nearly 400 Acres at Crofton

London's reconstructed Crofton Airport will cover nearly 400 acres, according to a report from Trade Commissioner William M. Park at London, who states the airport is now nearing completion. More than \$1,000,000 has been spent.

Among the principal features of the new airport is a large main building with a 250 ft. frontage, housing the Air Ministry's administrative offices and the national British and French consulates along the airfield. To the left of this building are the large airplane hangars, which are 300 ft. long, 100 ft. deep, and with sliding doors 30 ft. wide. Together they enclose approximately 30 of the largest passenger airplanes in use today. Behind these hangars are up-to-date work shops and repair shops. On the right side of the administrative buildings is the new hotel containing 60 bedrooms, most of them with bath, for the use of air passengers arriving late at night or departing early in the morning.

Left Haines Begins Plane-Road Service

With the recent arrival of the North German Lloyd liner Columbus at Bremerhaven, the Left Haines new airplane boat service began. The plane and the boat, both passenger-carrying, and flew to Bremer, arriving fully seven hours ahead of the train. An eight passenger plane was used to transport the service.

De Pinedo Landing Seaplane Fleet Cruise

A cruise of the western portion of the Mediterranean including stops at Barcelona, Cartagena, and Cadix is being conducted by Comdr. Francisco de Pinedo of Italy. A fleet of 58 seaplanes are carrying more than 200 persons in the cruise. It is reported

AIRPORTS AND AIRWAYS

Elko, Nev.

By John J. Haddock

Elko, a refueling stop on the transcontinental airway between St. Louis and Reno, has a municipal airport less than a mile west of town and right off Victory Highway. As first an east-west runway of 2700 ft. was leveled, but that is now being increased to a mile. The north-south runway is 2700 ft. and is being increased to 3200 ft. The prevailing wind is east.

The field has an 80 x 100 ft. hangar which can house five planes. Gas and oil and minor repairs can be had at the field as well as the service of two mechanics.

B. W. Baker and R. C. Haddock, Department of Commerce air operators, furnish weather reports and receive and transmit information of arrivals and leaving of airplanes. Baker is in charge of the radio station. He is a former mechanic with seven years experience in that line. He was recently promoted to his present position when O. W. Larnes was transferred to Concord, Calif.

J. L. Farrow is in charge of the field for the Boeing Air Transport Co., W. C. Wagnell, mechanic, and Farrow take care of all repairs.

On a little hill back of the Elko field the Department of Commerce is erecting a 55 ft. tower for a beacon. Elko will also have a radio beacon when night flying begins.

The Elko-Elko are proud of the fact that they are on the transcontinental airway and demonstrate it every time they



Elko City Transport plane refueling at the Elko Airport. Field Manager J. L. Farrow, left, and W. C. Wagnell, mechanic, right.

at a chance, by making improvements suggested by surveying engineers. The city immediately agreed to install beacon lights and light the runway. This latter was the buying of more land.

Little Rock, Ark.

By John J. Haddock

A special committee to investigate the possibility of the establishment of an air mail route through Little Rock, was recently appointed by W. C. Robinson, president of the Little Rock Chamber of Commerce. Reasons of the possibility of Little Rock might be named as one of the stations on the proposed airway from Cleveland and Louisville through Memphis and Little Rock to Dallas, have been revolving for several days. The duty of this committee will be to travel down the river, and find what industries exist in the river to gain the line. Members of the committee are to include J. Williams A. McDowell, a banker, chairman; J.

A. Greenman, postmaster; J. Carroll Case, commanding officer of the 154th Observation Squadron, Arkansas National Guard; Maj. Robert Case, commanding officer of the Little Rock Intermediate Air Depot; Lett, S. L. Wallace, Department of Commerce through Inspector, and Robert Williams.

The first of a series of station-to-station flights in his campaign for governor of Arkansas was made recently by Maj. J. Carroll Case, commanding officer of the 154th Observation Squadron, Arkansas National Guard, and present holder of the station to Wallace. Maj. Case was flying an American Eagle plane donated to him for the purpose by the Felix Baum Motor Co. of Pine Bluff, of which he was formerly sales manager. He says he plans to make a flight in the hours before the end of the season in Arkansas, if it affords enough level space for him to land for plane upon

St. Louis, Mo.

By M. L. Alexander

St. Louis has been selected as the first week-end stop of the more than 40 airplanes which are to compete in the Ford Reliability Test. The planes are scheduled to arrive at Lambert-St. Louis field at the afternoon of June 30 from Indianapolis and will depart on July 2 for the run of the 6,000 mi. race. At least four St. Louis-made airplanes are to be entered. It is understood that a Byrd-Brewster entered in the competition will be piloted by Philip E. Love, flying master of General Lindbergh in the Army and air mail service and has spent on the Transcontinental service test. The other St. Louis planes, a Curtiss "Belted", is still without a pilot.

Maj. Albert Bond Lambert, dean of St. Louis firms will be in charge of the field for the Ford test, assisted by T. Preston Sullivan, World War ace who is now Phil Love's partner in a firm of airport consultants. A fund of \$9,000 will be raised by Mr. Air Board committee headed by Oliver L. Parks, to defray the expenses of the Ford race.

Ford Test Participants Arrive

Ray Collins and Ray Cooper, the participating expedition for the Ford test, stopped off at St. Louis recently in an Army P-40s piloted by Lieutenant Smith. They expressed themselves as pleased with preparations made here for the test.

Eighteen P-40s of the First Pursuit Group dropped in at Scott Field recently, on route from the spring maneuvers at Fort Leavenworth to the home station at Selfridge Field, Mich. The planes, flying in formation and headed by Capt. Frank H. Prichard, provided 2800 feet of various types, which came in singly. A passenger in a P-40 was Brig. Gen. Frank Parker of the General Staff. He was piloted by Maj. Lee H. Haddock.

Jack Merrill—"Lucky Jack" he calls himself—had a narrow escape when he parachuted down into a mass of molasses when at Stages Airport in a recent Sunday flying exhibition. The chute failed over today and day were and the short-crested long-spined recently while Merrill hung in his harness with his feet six feet from the ground. After some minutes he was released by other men who brought a ladder and held it for him while he scrambled his harness and climbed down.

Larry, James J. Jankowski, who has given the 15th Division Air Service's new P-40s more hard work than any pilot in the squadron, has joined the instructors staff of Robert

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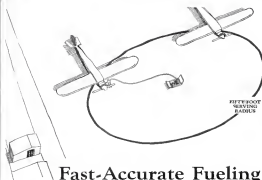
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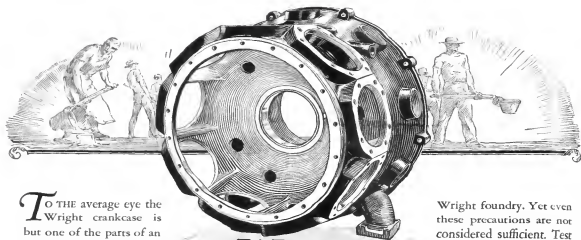
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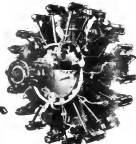
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